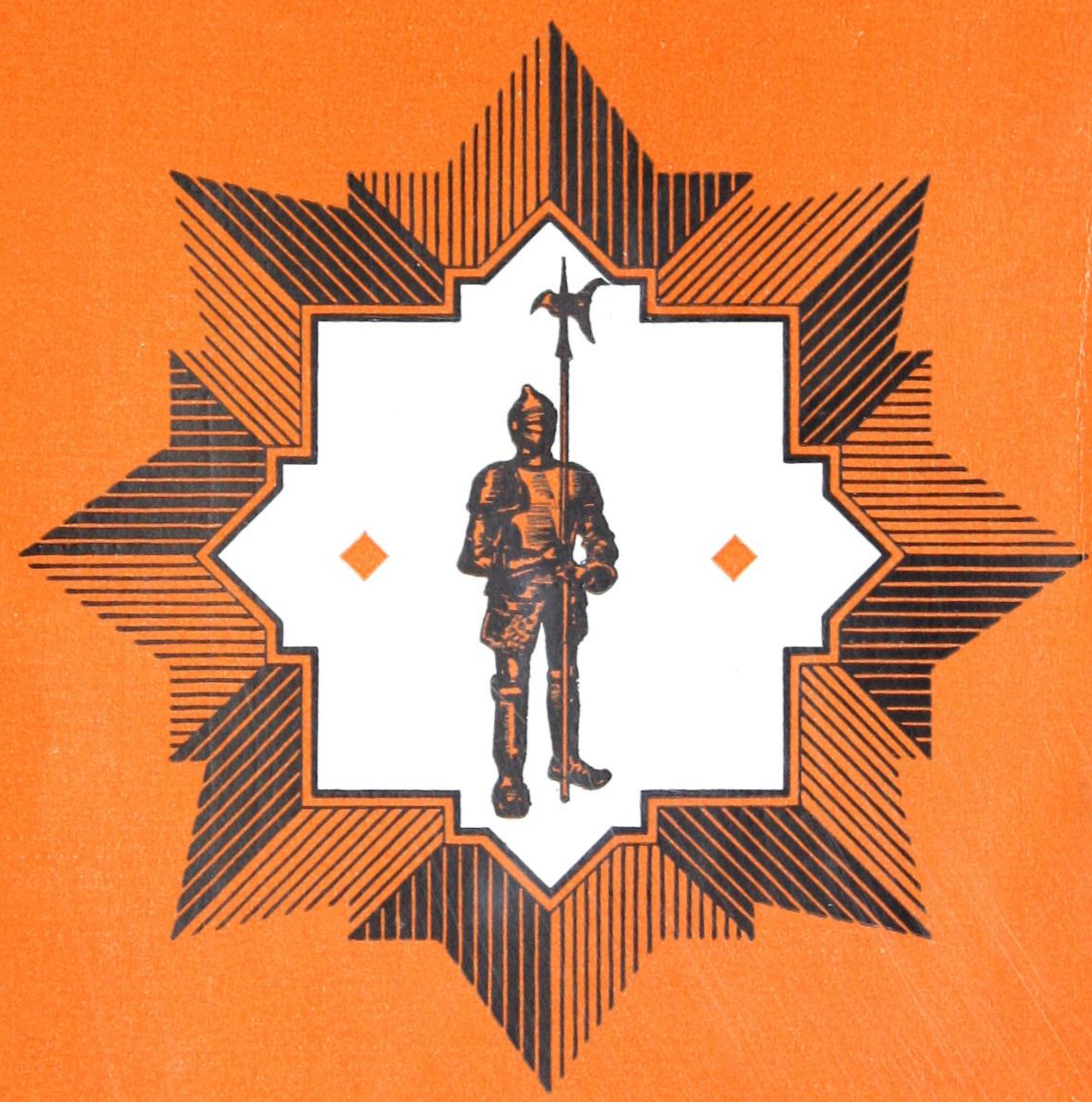


FEB 25 1932

PLANNED LIGHTING



A.I.A. FILE NO. 31-F
Reprinted from Sweet's 1932 Architectural Catalogues

FRANKLIN INSTITUTE
PHILADELPHIA

CURTIS-JOHN-ZO

CHICAGO
NEW YORK
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ANTWERP

X-Ray
Reflectors



Curtis Lighting, Inc.

Manufacturers of



Golden Armored

Illuminating Engineers—Artists—Designers

1125 West Jackson Boulevard
CHICAGO

Originators of



Indirect Lighting

EUROPE

Curtis Lighting-Europe (S.A.)
Antwerp, Belgium

NEW YORK

Curtis Lighting of New York, Inc.
230 Park Avenue
Telephone: VAnderbilt 3-80-40

CANADA

Curtis Lighting of Canada, Ltd.
260 Richmond Street, West
Toronto

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SEATTLE, WASH., Terminal Sales Building	ELiot 3364	Ed. C. Bossler

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Lighting for

PARTIAL LIST OF PUBLICATIONS AVAILABLE

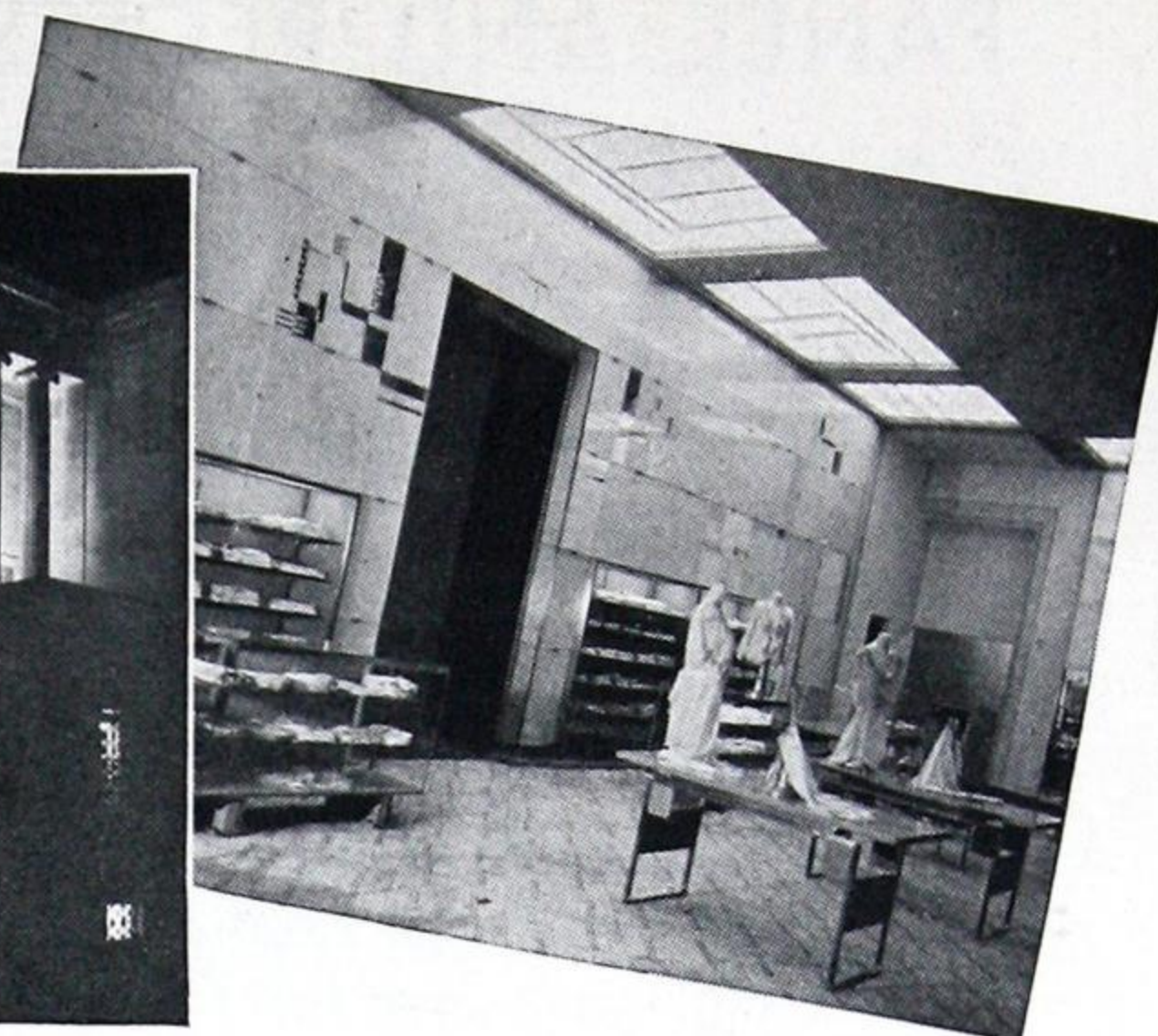
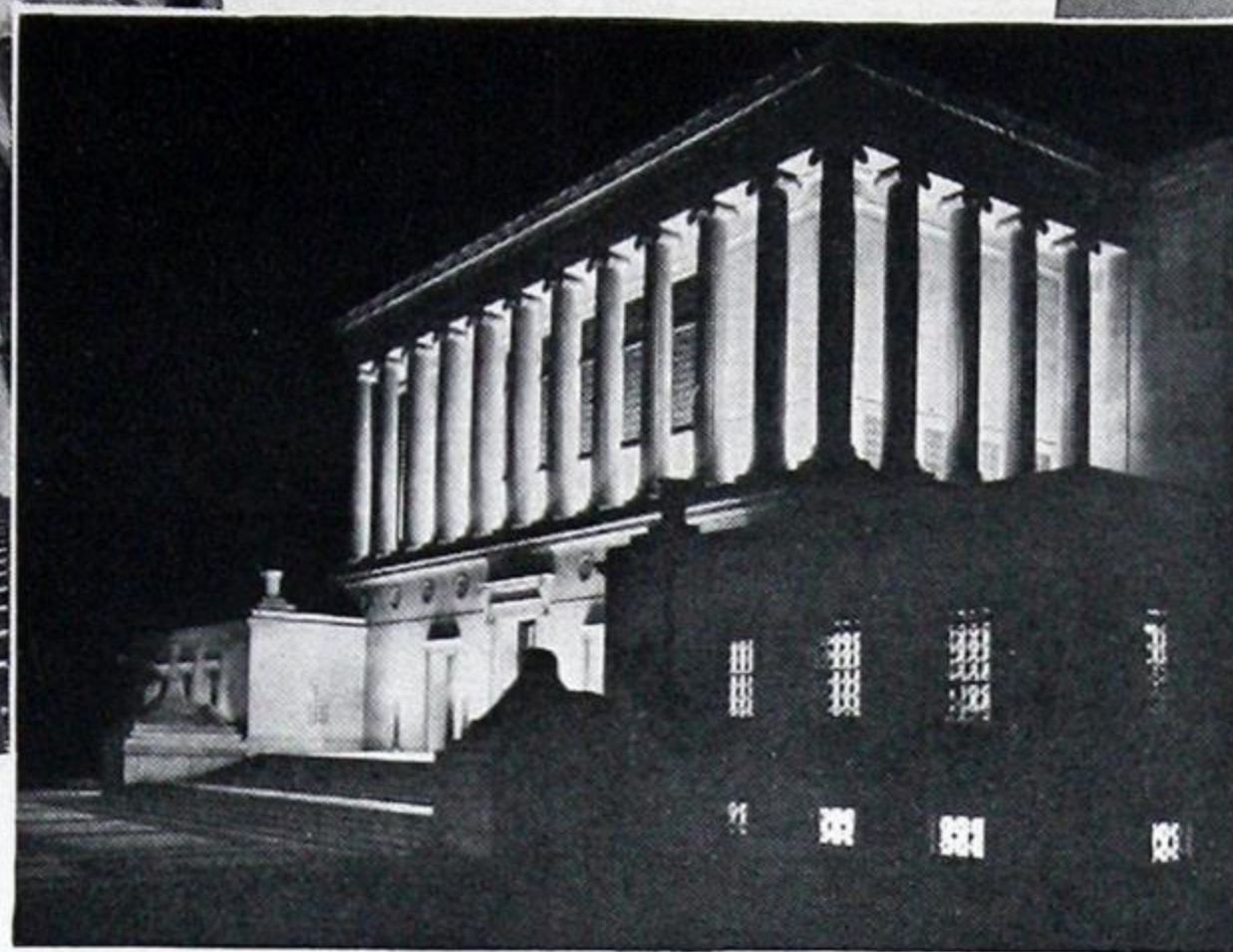
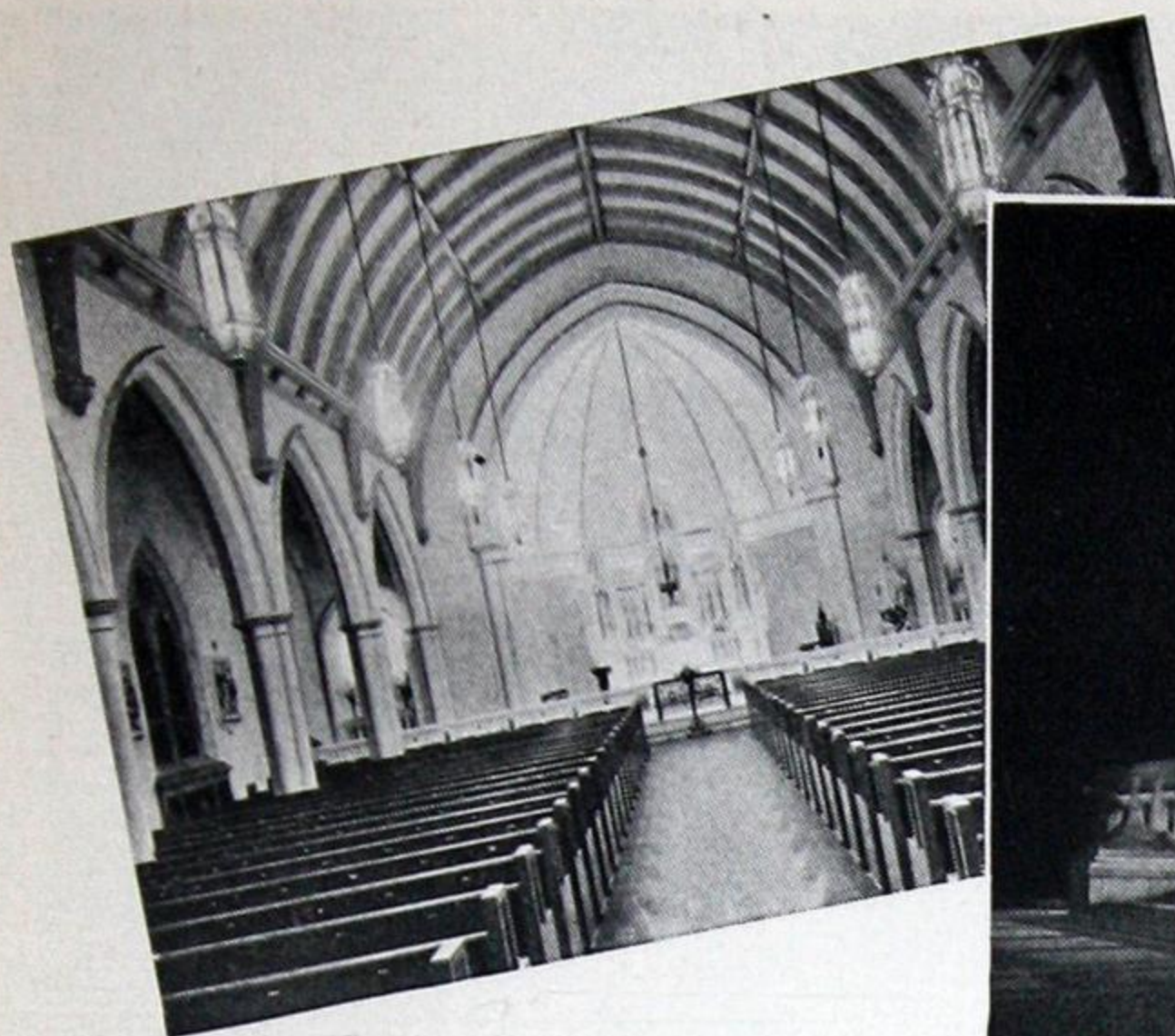
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APPLIED CURTIS LIGHTING IS [1] PLANNED LIGHTING



Curtis Lighting

THE success of "Planned Lighting" is due largely to the close co-ordination of effort between the architect, lighting specialist and those concerned in the construction and equipment of buildings.

CURTIS LIGHTING is "Planned Lighting,"—each job engineered to provide the correct amount of illumination for proper architectural and lighting effect. The pages which follow illustrate completed jobs and give suggestions for planning similar installations.

The basic principle of CURTIS LIGHTING is the X-Ray Reflector, introduced in 1897, and known the world over for efficiency, light control and durability.

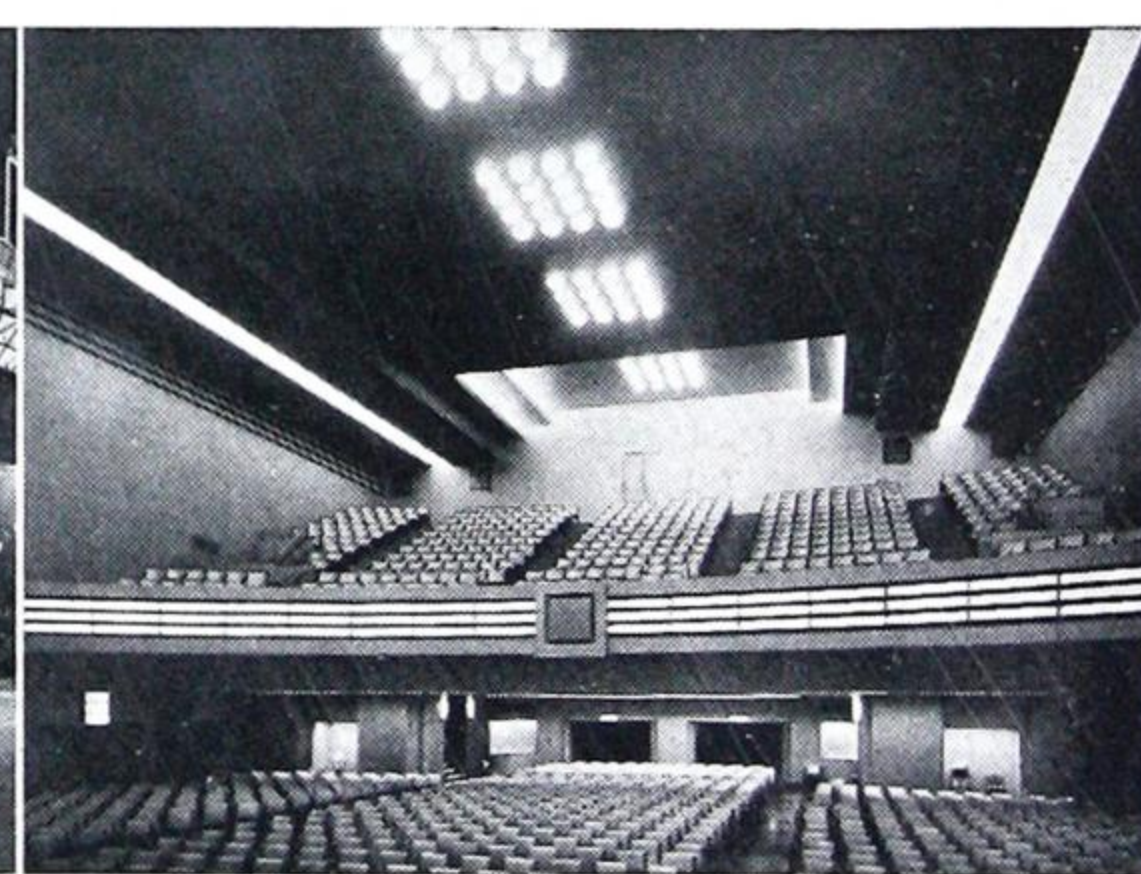
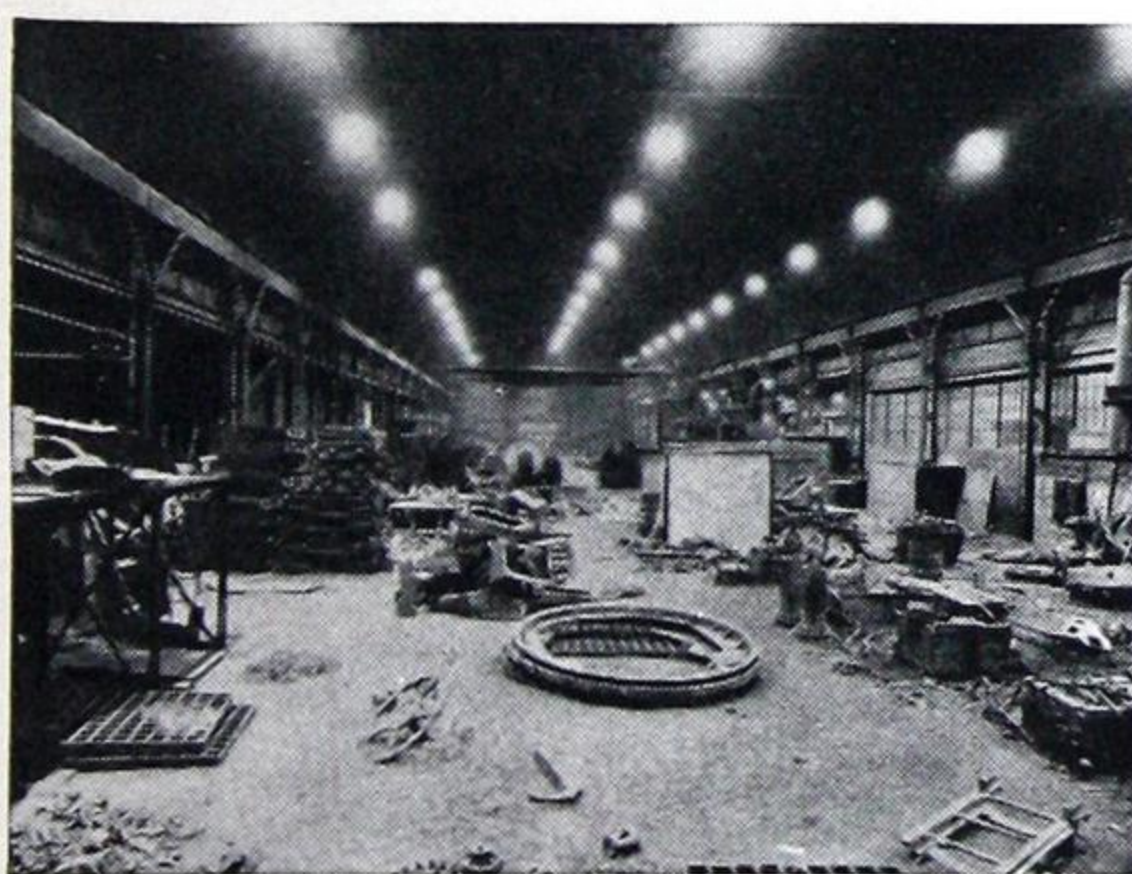
X-Ray Reflectors are made of the clearest crystal

glass, plated with pure silver, and Golden Armored to protect and keep the silver bright at all times!

Insist on GOLDEN ARMORED X-RAY REFLECTORS; guaranteed to give perfect service and complete satisfaction, regardless of the date of purchase.

Representatives of CURTIS LIGHTING are located in the world's principal cities,—with factories in United States, Canada and Europe. The organization is one of the largest devoted to the design and manufacture of Engineered Lighting Equipment and Luminaires.

CURTIS co-operation is extended to Architects, Engineers and others interested in developing or applying advanced lighting methods.



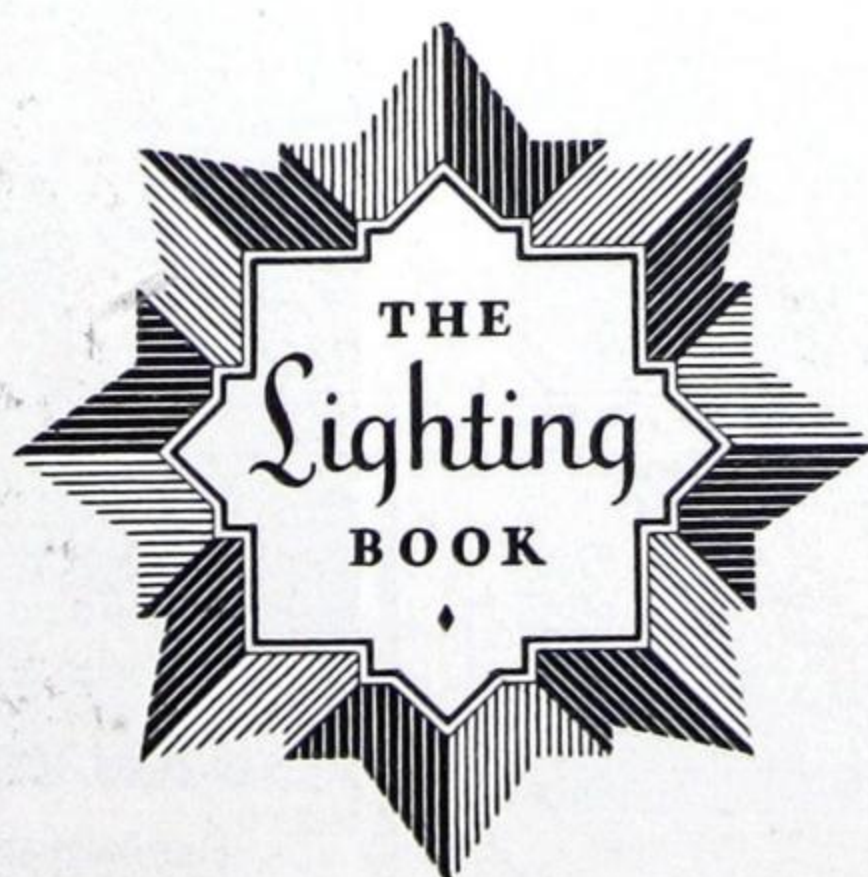
"PLANNED LIGHTING"

Is worked out in detail in the architect's office when the structure is being planned, to provide the ideal system of illumination.

It produces harmony between structural arrangement and architectural detail, obviating later costly alterations and compromises in both architectural plans and lighting effect.

"Planned Lighting" insures the right atmosphere or effect with proper interpretation of architectural values by providing the correct amount of illumination where it is needed.

And provides flexibility for easily and economically increasing intensities of illumination for future needs.



"THE LIGHTING BOOK"

Presents reproductions of outstanding "Planned Lighting," together with ideas and suggestions similar to those covered in the following pages.

The author, J. L. Stair, Chief Engineer, CURTIS LIGHTING, INC., has been highly complimented on the presentation and thoroughness.

Architects who have copies of "The Lighting Book" and use it constantly, find it very valuable.

Schools and colleges use it as a combined reference and text book in the study of illuminating engineering. Copies for general reference are available in public libraries, as well as libraries of universities and technical schools.

PANEL AND RECESSED LIGHTING

Moderne interiors lend themselves especially to panel or recessed lighting, although this application is not limited only to rooms in Moderne.

Glass used for this type of lighting is generally flashed opal. Sections of each panel are generally hinged for maintenance and relamping, unless there is access to equipment from back of the glass panels.

As an alternate, panel lighting might be provided from what would seem to be rosettes, or multiple skylight units. Or it might take the form of large panels resembling a skylight. Still another type has individual recessed units located at or near the ceiling, or placed individually, or in series in the side walls.



Exchange Floor, Haddon Hall, Atlantic City, N. J.

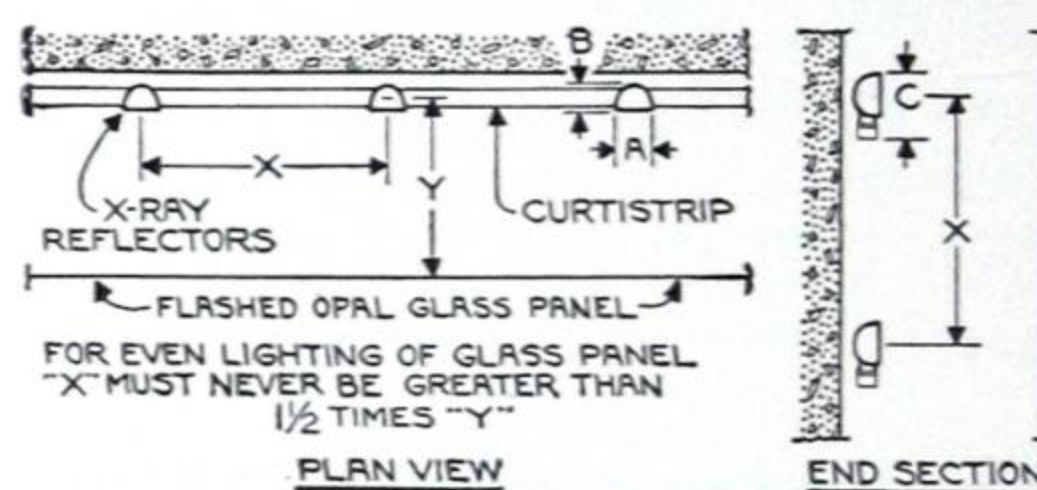
RANKIN & KELLOGG, Architects

For this type of installation No. 7 X-Ray Reflectors, using 60-watt lamps, mounted 12 in. o.c. on CurtiStrip, produce the splendid results shown. Flashed opal glass offers complete concealment of lighting equipment, and spacing on 12-in. centers gives uniform distribution.



Bullock's-Wilshire Building, Los Angeles, Cal.

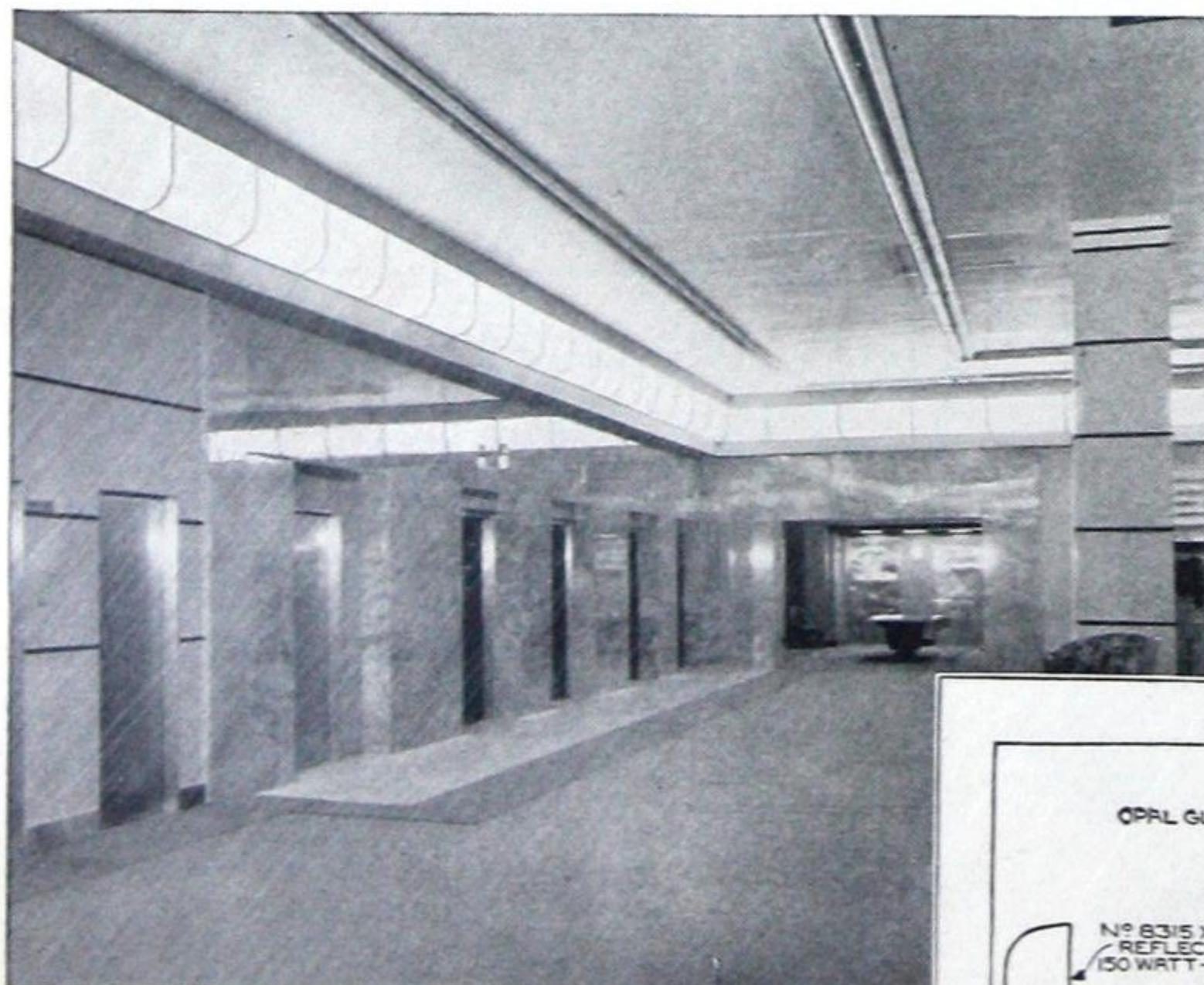
JOHN AND DONALD PARKINSON, Building Architects
FEIL AND PARADISE, Designers of Store Interiors.
An outstanding example of engineered lighting.



Wattage

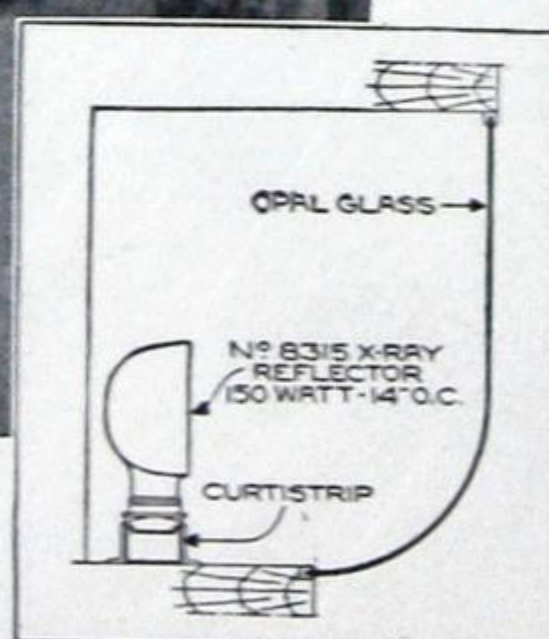
Using flashed opal glass, 4 watts per sq. ft. of floor area will give approximately 6 to 8 foot-candles.

Wattage	Unit No. (including holder)	X-Ray Reflector No.	Dimensions		
			A	B	C
60	8305	EC-50	4"	3 1/16"	7 1/16"
100	8310	EC-100	4 5/8"	3 5/16"	8 1/2"
150	8315	EC-150	5 1/8"	3 1/2"	9 1/2"
200	8320	EC-200	5 3/4"	4"	10 5/8"



Store Foyer, T. Eaton Company, Ltd.,
Toronto, Can.

ROSS & McDONALD, Architects
SPROAT & ROLPH, Associates



Restaurant, T. Eaton Company, Ltd., Montreal, Can.

Two rows of No. 8310 X-Ray Reflectors 16 in. o.c. on CurtiStrip are used in this installation.

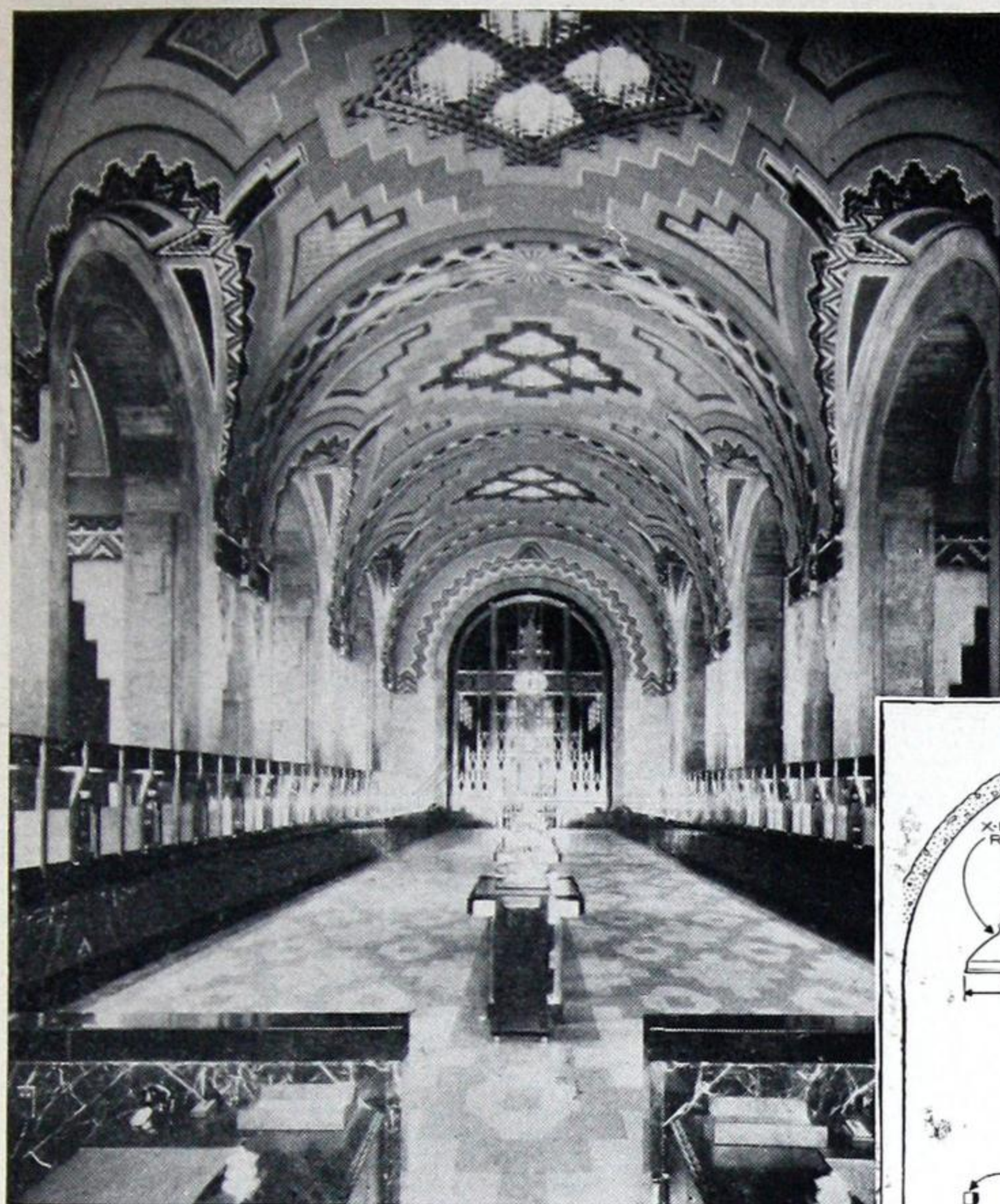
Light Transmission Through Glass

The amount of light transmitted through glass panels used in skylights, wall panels, etc. varies with the type of glass, as indicated in this table.

Type of glass	Transmission factors	Type of glass	Transmission factors
Clear hammered.....	90-95%	Clear antique.....	85-90%
Clear sanded hammered..	70-85%	Amber antique.....	75-80%
Clear pebbled.....	65-80%	Sanded amber antique..	55-70%
Amber hammered.....	70-75%	White opal.....	35-50%
Sanded amber hammered	50-60%	Flashed opal.....	55-60%

Directional Panel or Unit Lighting

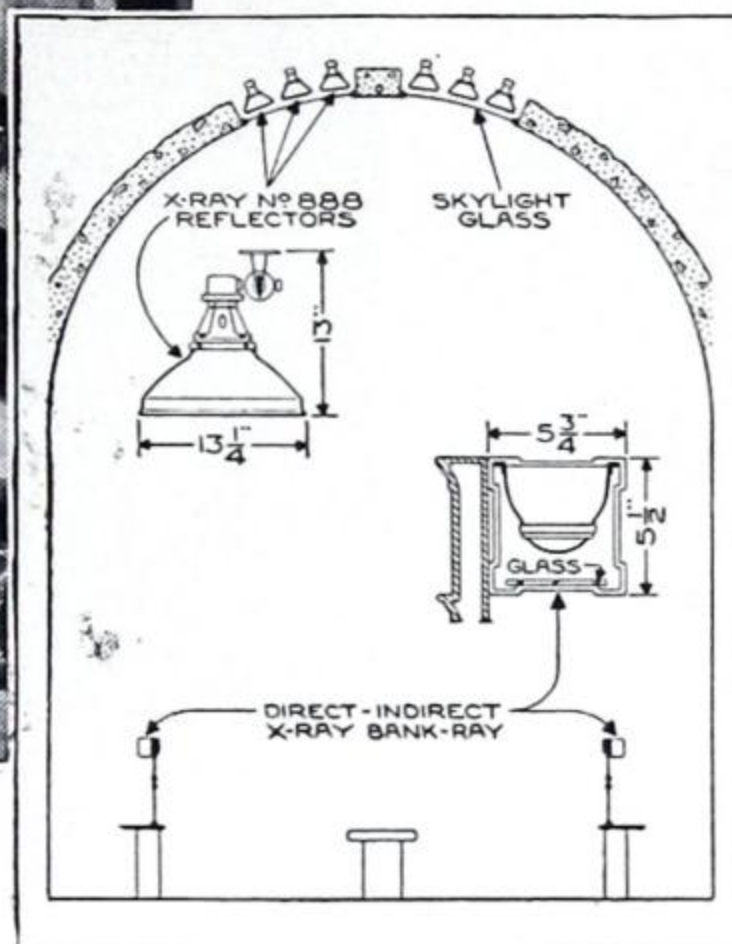
Lighting, as shown in the photograph below, may be planned for utility or effect, or a combination of both. Determining factors are color of side walls, location and angle at which reflectors are mounted, distance at which light must be projected, and size of units that may be employed. For additional suggestions see Page 8.



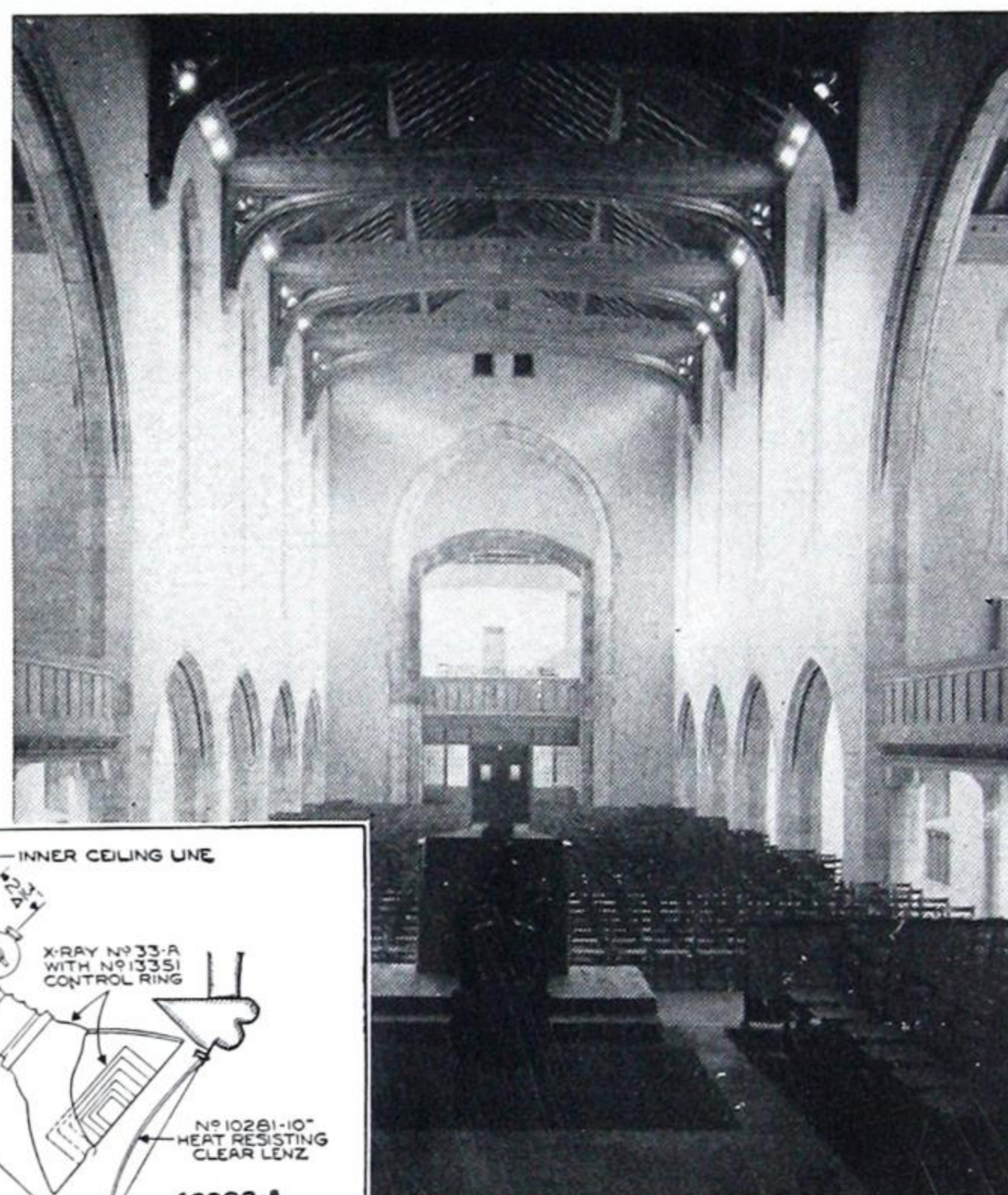
Main Banking Room, Union Trust Co., Detroit, Mich.

SMITH, HINCHMAN & GRYLLS, Architects

Dual illumination. X-Ray direct-indirect Bank-Ray, with 150-watt lamps on 18-in. centers, provides indirect lighting for the room and direct lighting on bank counters. Ceiling panel lighting brightly illuminates public space.



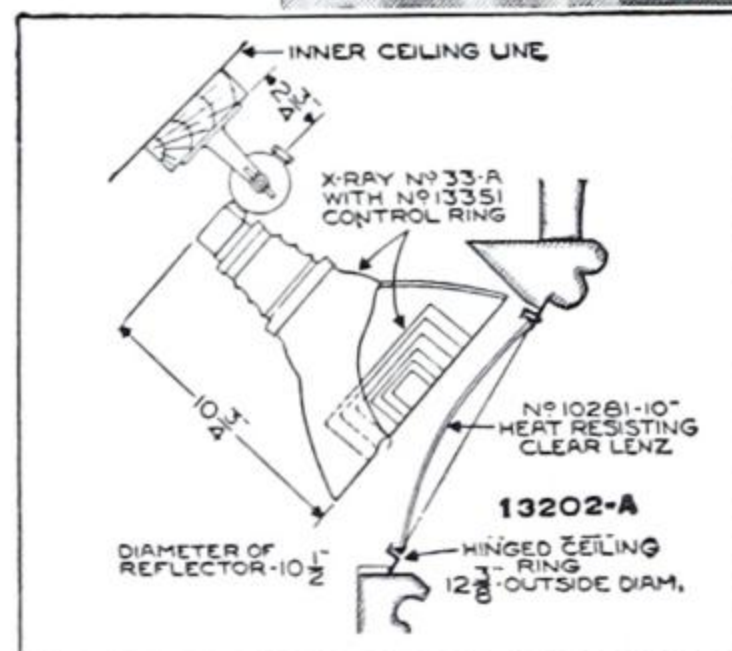
Additional details on No. 888 are on page 23. "Bank-Ray" has 150-watt X-Ray Reflectors on 12-in. centers.



Side Walls Used as Reflecting Surfaces, M. E. Church, Knoxville, Tenn.

BARBER and McMURRY, Architects

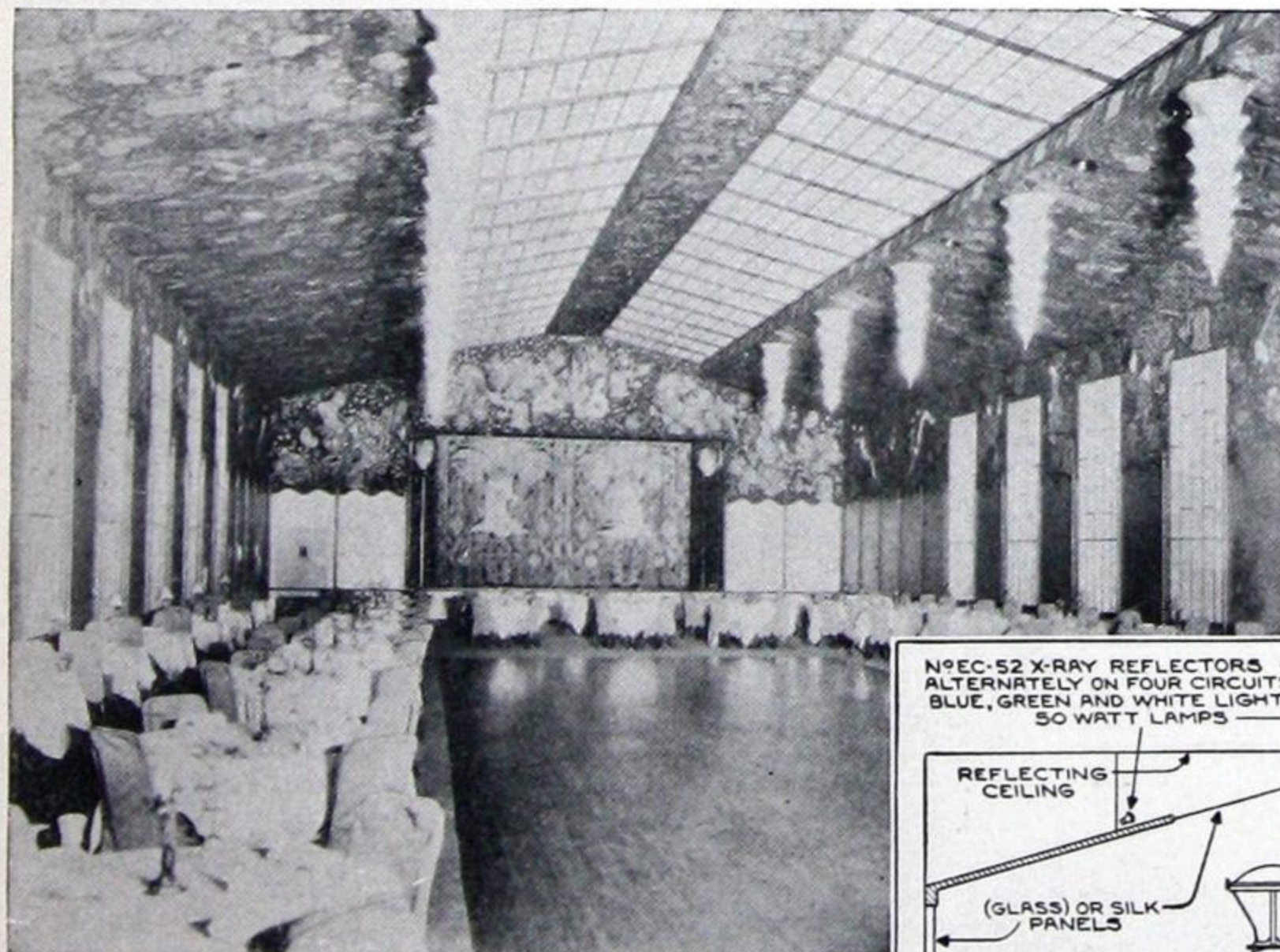
For details of hinged rims, see Pages 23 and 25.



Planning Lighting With Ceiling Panel Units

Arrangement of ceiling panel units depends on general structural conditions and architectural motif. The diagrams and tables governing skylight lighting on Page 8 govern lighting from ceiling panels. Where space above ceiling is limited, or where "box type" of panel unit must be shallow, lamps without reflectors may have to be used.

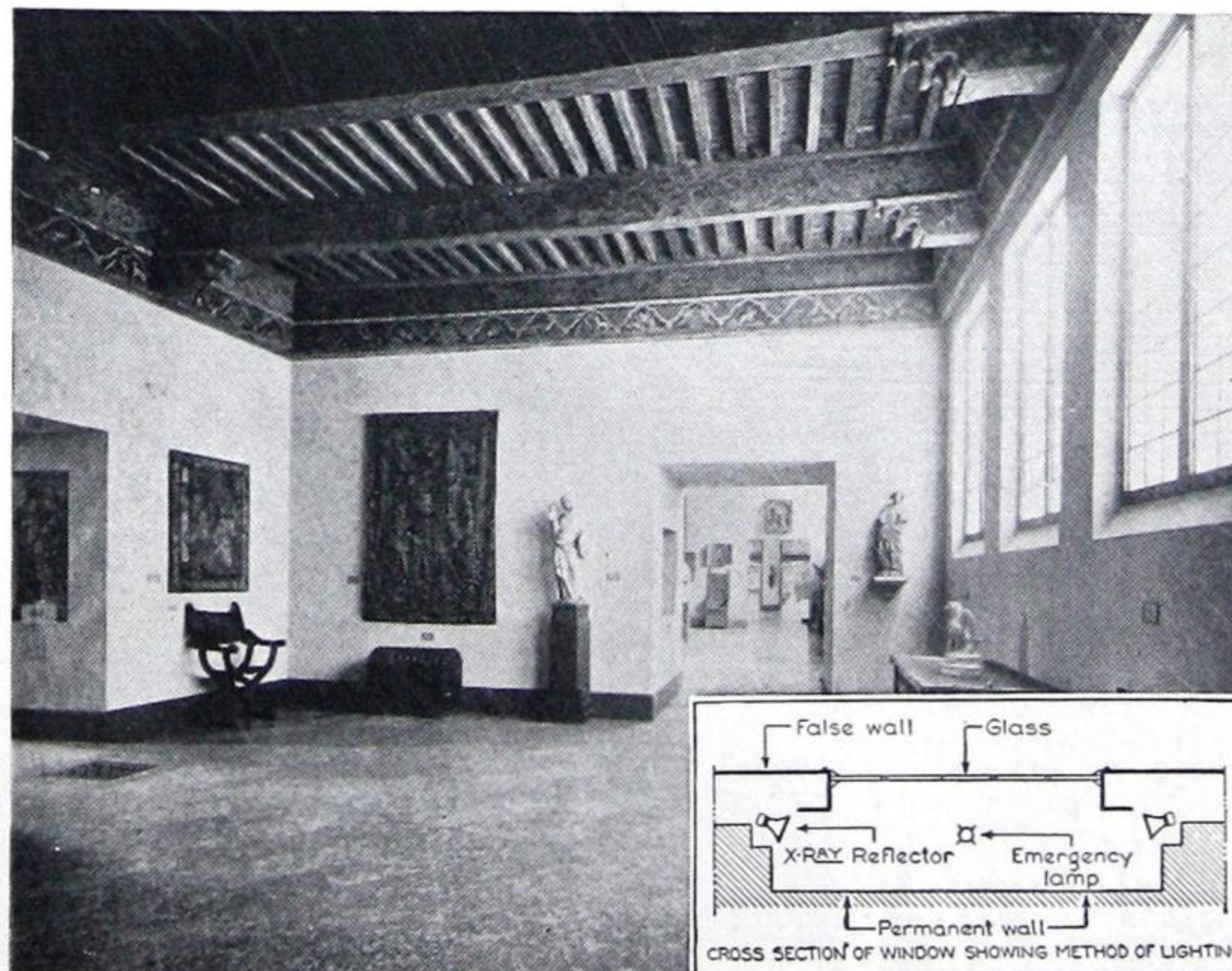
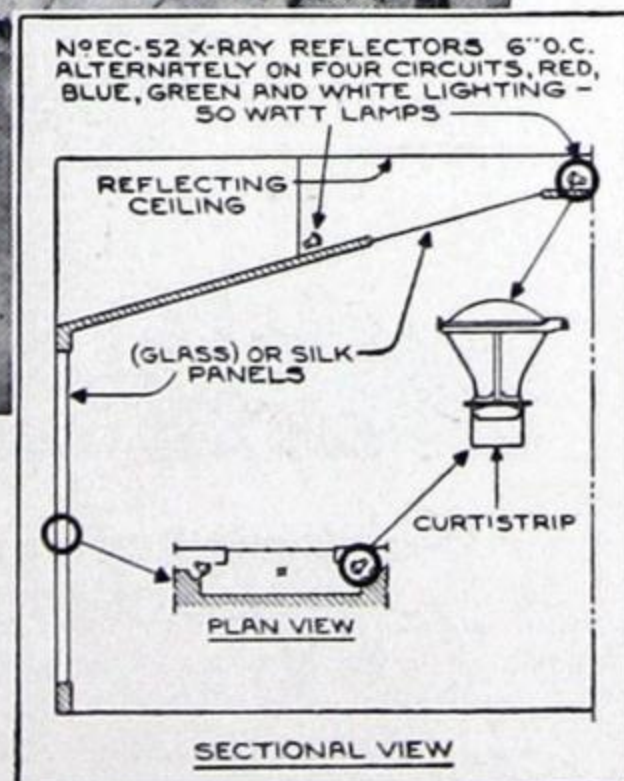
Curtis Engineers will gladly assist in planning panel, directional, or unusual lighting effects.



Indirect Panel Lighting for Roof Garden, Gibson Hotel, Cincinnati, Ohio

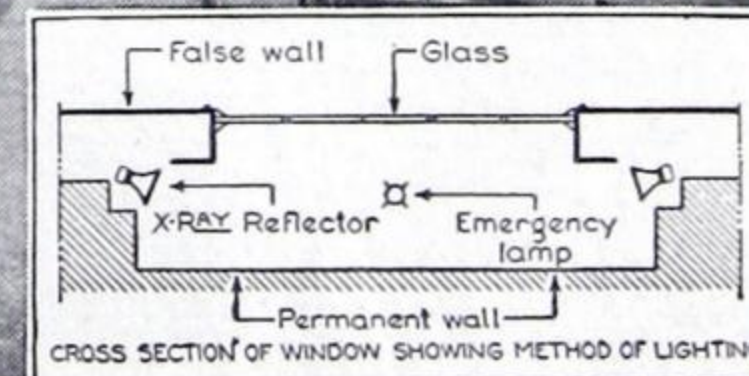
GUSTAVE W. DRACH and ASSOCIATES, Architects

Diagram explains unusual lighting in this unusual interior. Luminaires of silk are purely decorative.



Metropolitan Museum of Art, New York, N. Y.

Except for the diagram, one might believe that this room received natural daylight through the panel windows. This is indirect lighting through glass panels. Use principle of Panel Lighting, Page 3, for direct lighting.



COVE LIGHTING

Cove Lighting is one of the most effective, yet most difficult methods of illumination to properly apply. It has been widely adopted because of the fact that reflector equipment can be easily hidden in the architectural elements of the structure.

The idea of compactness is of great importance, so that no architectural feature be over-emphasized. At the same time coves or cornices must be constructed to offer complete concealment of lighting equipment.

Atmospheric moods or effects are created or emphasized by planned cove lighting. It is especially desirable in churches, auditoriums, theatres, display rooms, conference rooms, lobbies, etc.

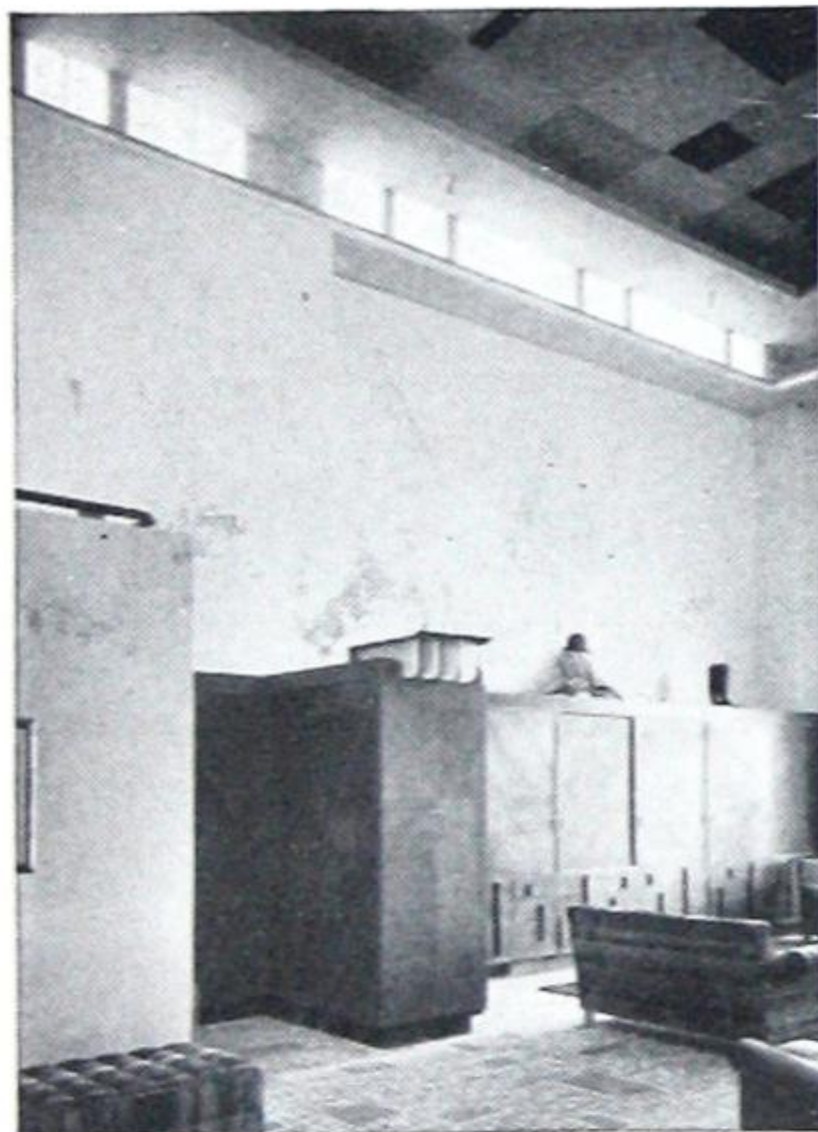
Rooms in Moderne design admirably lend themselves to cove lighting either in the usual complete cove, or with abbreviated ceiling—or in a system of reverse cove lighting as in the lower left photograph.

Color lighting is particularly interesting and adaptable to cove or cornice lighting.

Photographs and diagrams cover general details for planning the size of cove, wattage, etc. It is advisable to consult Curtis Engineers to make certain that all conditions are conducive to satisfactory cove lighting.



Beautiful Lighting in a Beautiful Church



An interesting departure uses an abbreviated ceiling of proportions wide enough to serve as a reflecting surface to light the entire room.

Contrast between the light colored walls, the illuminated cove section and the Moderne ceiling produces a fascinating effect.

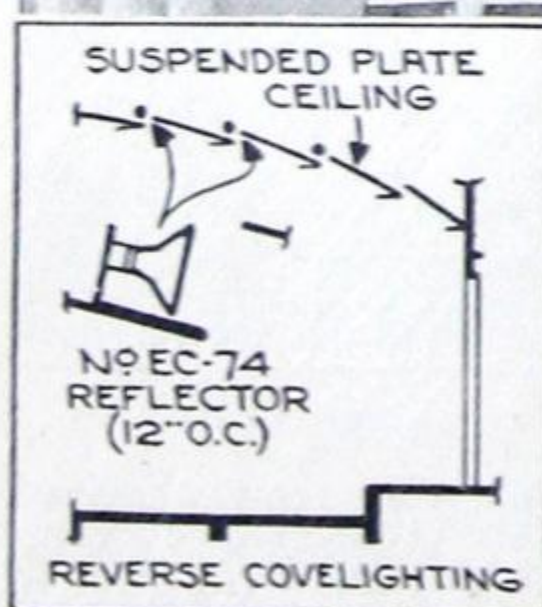
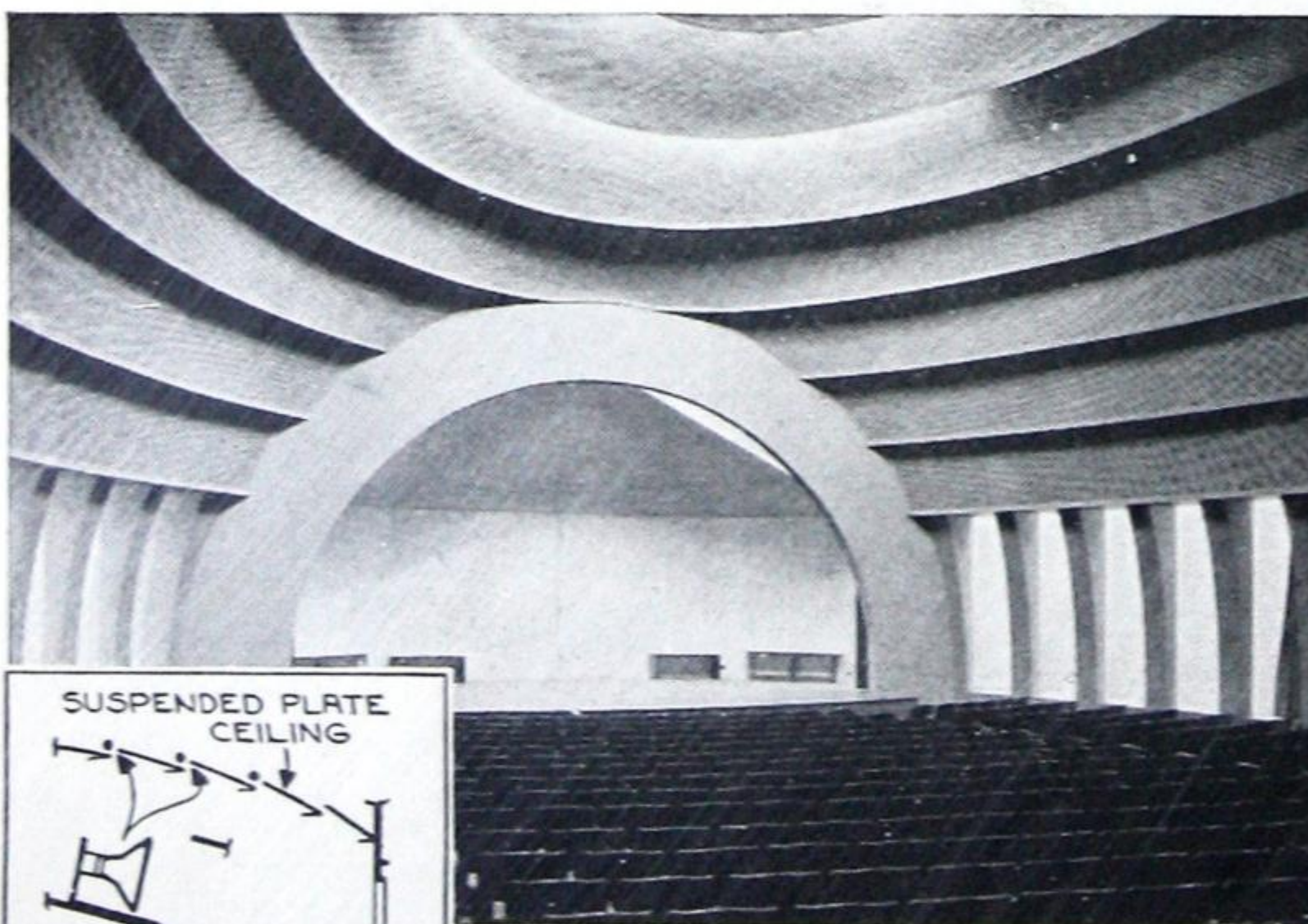
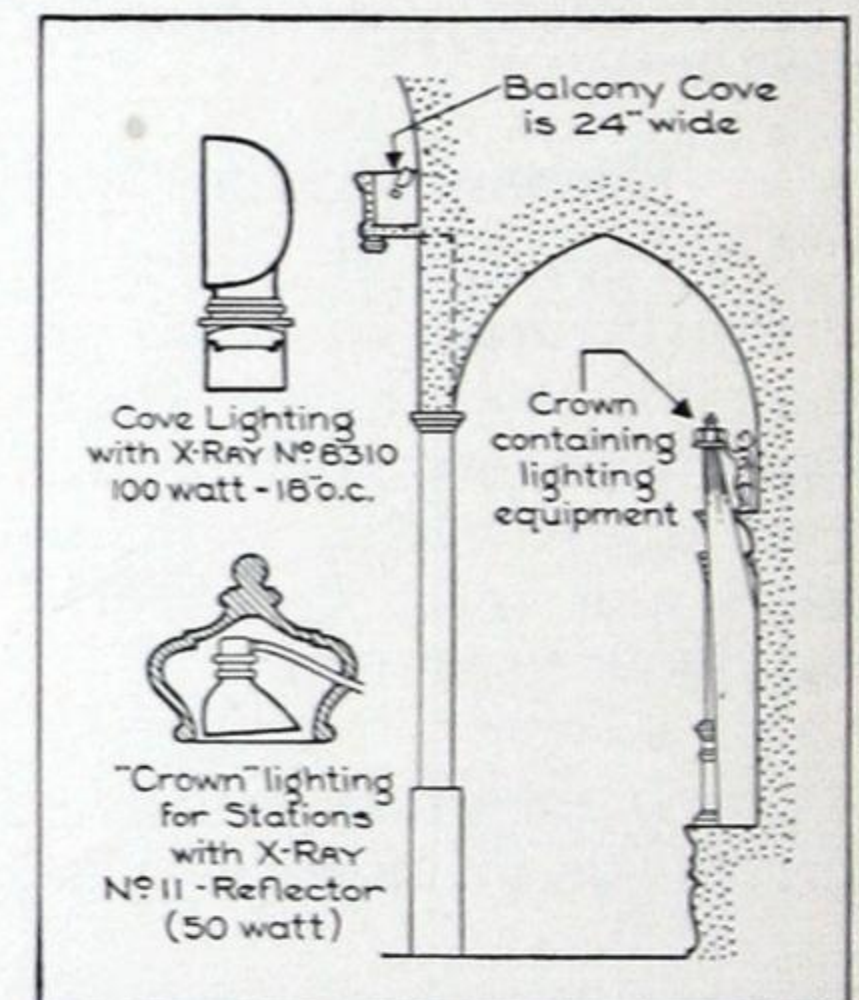
Applicable as a complete scheme of lighting—or to supplement lighting from a dome or skylight.

Bullock's-Wilshire Building,
Los Angeles, Cal.
JOHN and DONALD PARKINSON,
Architects

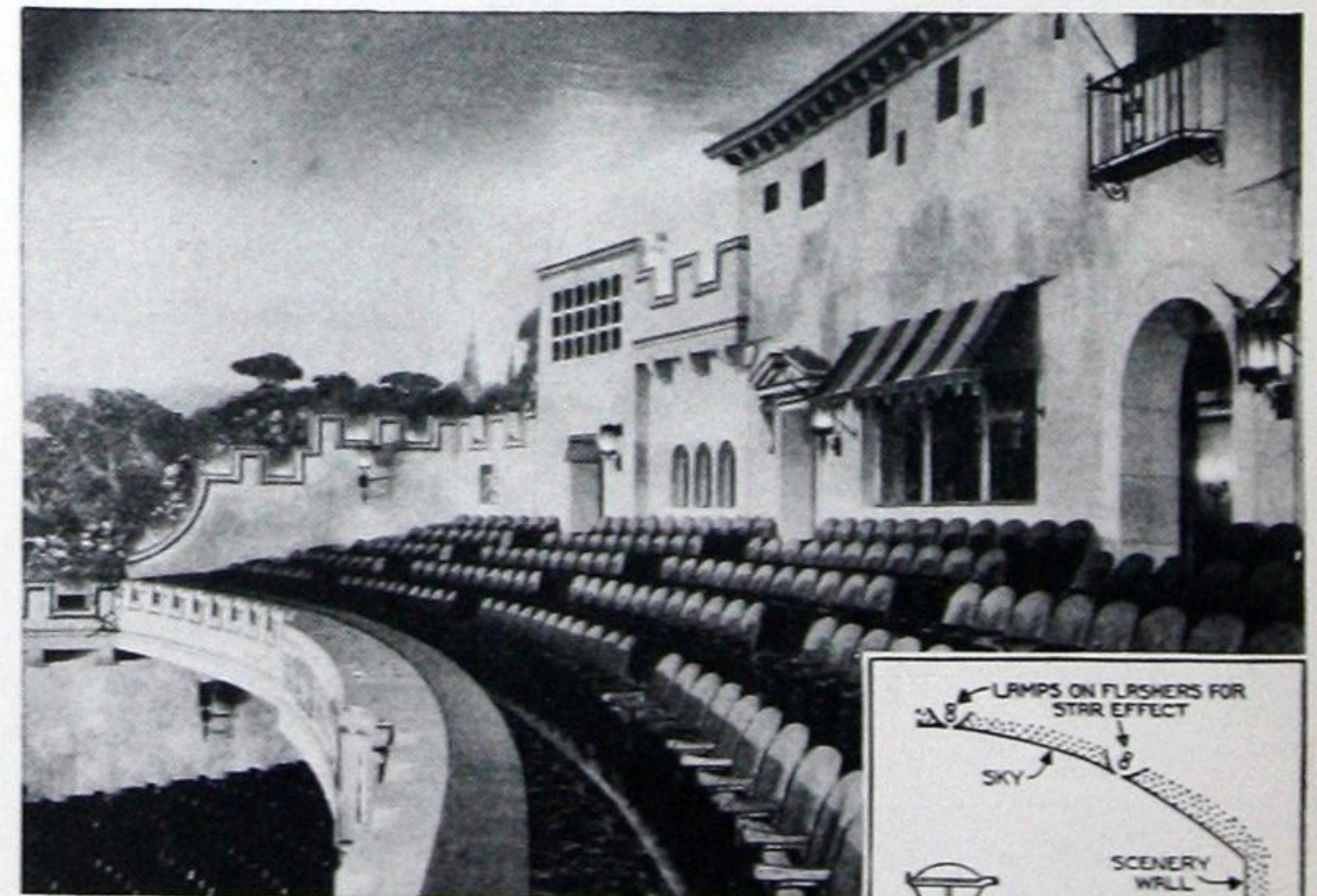
Sacred Heart Church, shown above, was provided with outlets for both fixture and cove lighting.

Cove lighting as shown in the diagram was decided upon. It brings out the detail and beauty of the interior and seems to "raise" the height of the ceiling.

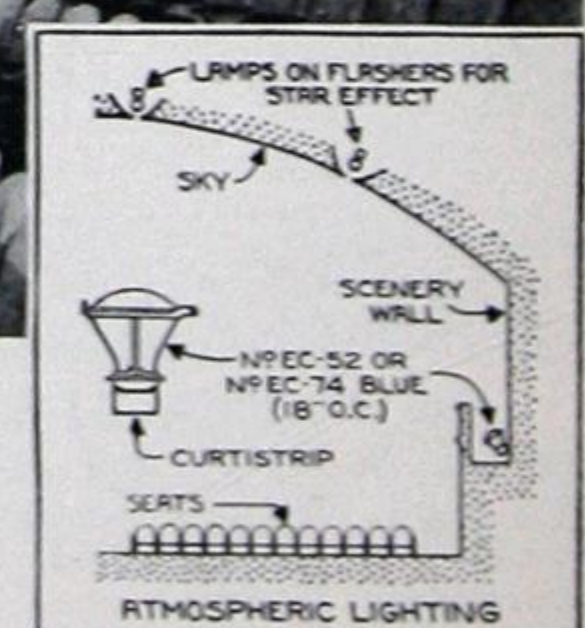
Lighting Stations of the Cross—Use No. 11 Reflector with 60-watt lamp, installed as far forward as pleasing architectural arrangement will permit. See Diagram at right.



Auditorium, New School for Social
Research, New York, N. Y.
JOSEPH URBAN, Architect
Unique reverse cove lighting places dramatic
emphasis on stage.



Atmospheric Lighting: Blue Sky with
Interesting High Lights
J. MURRAY BROWN, Architect;
D. WEBSTER, Associate.
An interesting "movie" theatre.





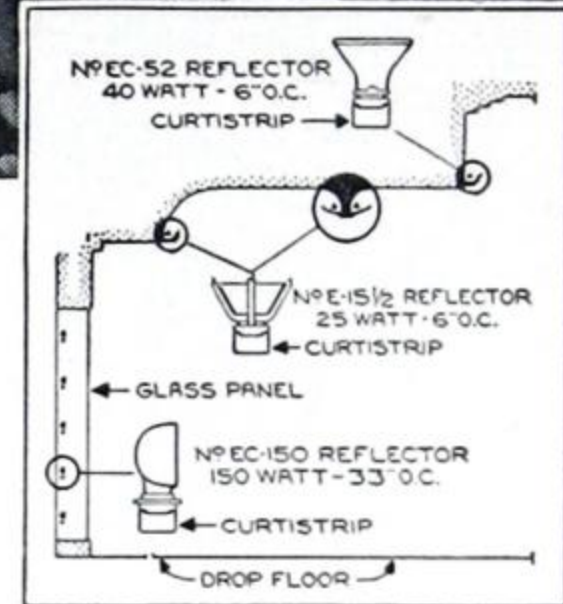
Above:
Niagara Electric Service
Building, Niagara
Falls, N. Y.
KIRKPATRICK & CANNON,
Architects
WM. A. MALONEY,
Electrical Engineer
EC-74 Reflectors on
CurtiStrip

At Right:
A. B. Leach Conference
Room, Chicago, Ill.
Designed by BRUNER &
SIMMONS, Office Layout
Specialists

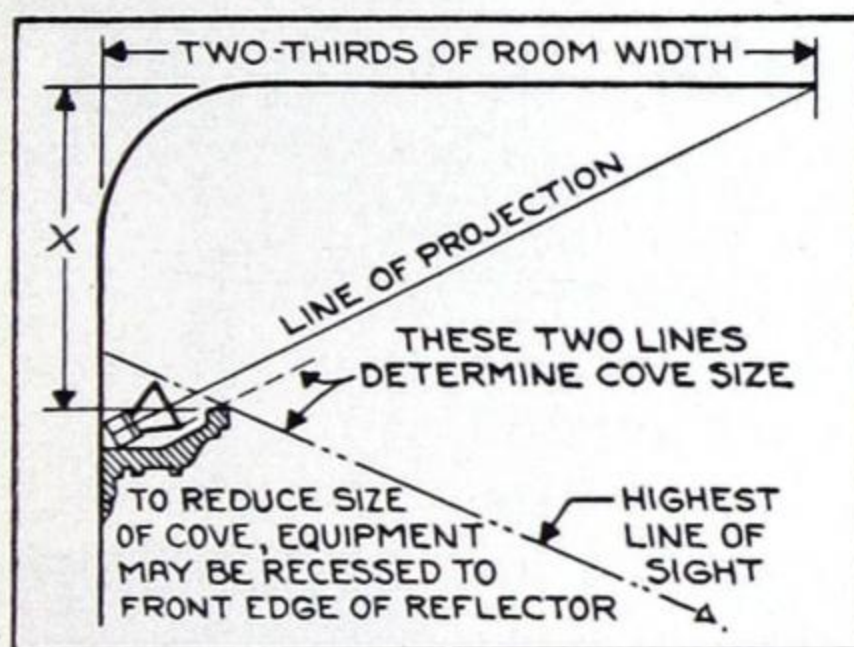


Above:
A Combination of
Cove and Moderne
Panel Lighting
Designed by JACQUES
CARLU of Boston and
Paris.
ROSS & McDONALD,
Architects

The panel lighting was
planned as outlined on
Pages 3 and 4.



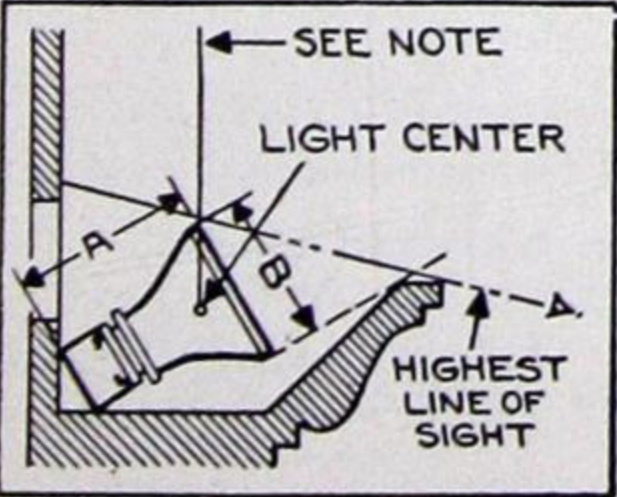
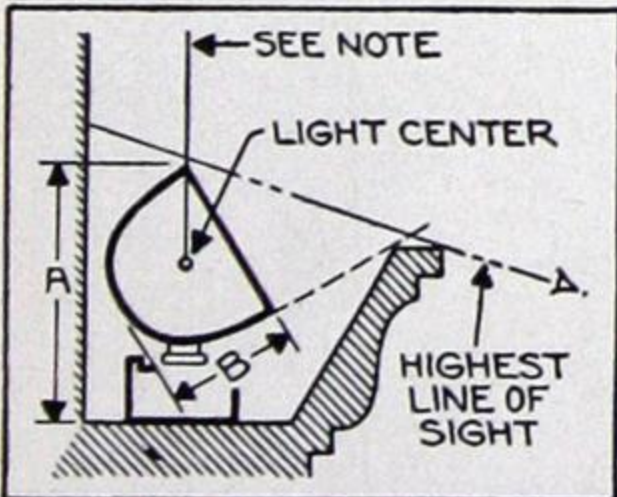
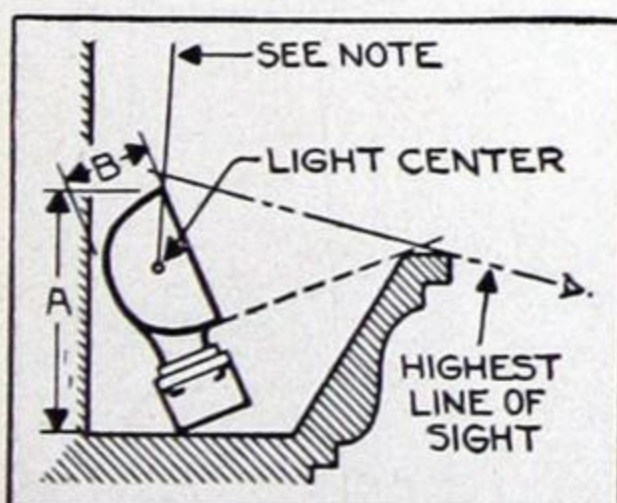
E-15½ X-Ray Re-
flector is used in small
coves. Consult Curtis
Engineers.



The distance "X" from top of cove
to ceiling should never be less than
 $\frac{1}{10}$ of the room width.

.....

Note: To insure even lighting on
back wall, this line of reflector should
be vertical or forward of vertical



Planning Cove Lighting

The three important factors in planning cove lighting
are size of cove, complete concealment of equipment
and uniform distribution of light on ceiling.

Line of Sight Governs Size of Cove—Location of re-
flector and equipment in the cove and line of sight
determine the size of the cove, as explained by diagram
at left. The distance the cove will project can be re-
duced as much as the distance equipment can be re-
cessed into the wall up to the front edge of the reflector.

Reflectors—There are two types of reflectors used for
average cove lighting. **Concentrating Types**—For shal-
lower ceilings where cornice is relatively close to ceil-
ing. EC-52—60-watt size is for small coves. EC-74—
100-watt size is for larger coves or in wide rooms.
Distributing Types—For average conditions. There are
four sizes—60, 100, 150 or 200-watts. This type can be
mounted horizontally or vertically.

Wattage—Should be approximately twice the wattage
for indirect lighting from fixtures; see Pages 15 and 16.

COLOR LIGHTING—Produced by fitting the same reflectors used for white lighting with
"Colrlenz" units, consisting of frame with red, blue, green or amber colored glass.
Wattage for each color is the same as for white lighting.



Above:
Distributing Type
EC-50, EC-100, EC-
150, EC-200.



Concentrating Types
EC-52, EC-74

At Right:
Colrlenz Frames
Mounted in New,
Simple "Clip Hinge"
Frame.
Especially appre-
ciated by mainte-
nance man.



COVE LIGHTING REFLECTORS AND DIMENSIONS

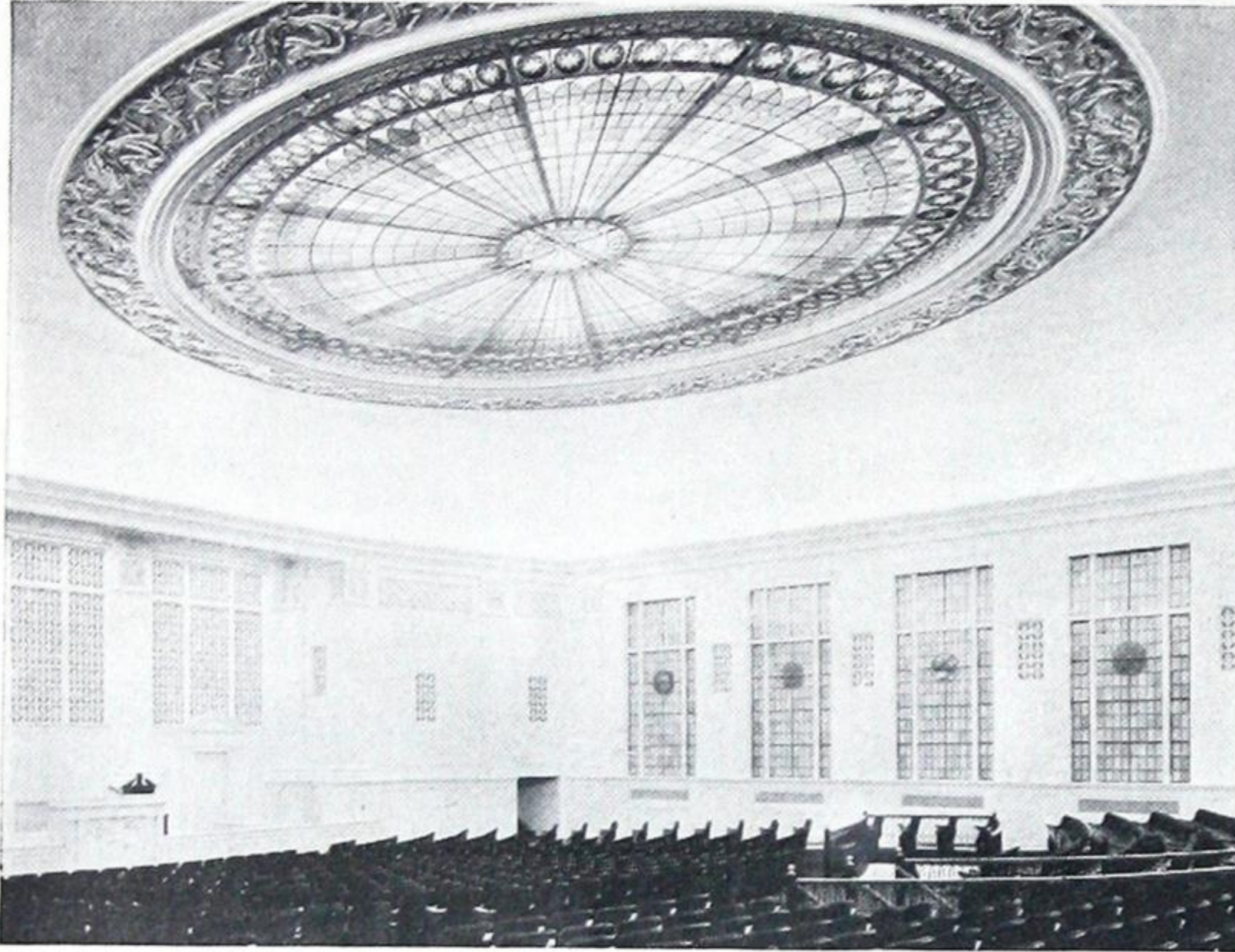
For White Lighting								For Color Effects Using Heat Resisting Glass Colrlenz Add Catalog Numbers			
X-Ray Ref. Number	Unit No. including holder	Wattage	Dimensions		Spacing						
			A	B	Min. white	Min. with color	Max.	Red	Amber	Blue	Green
EC- 50	8305	60	7 $\frac{1}{8}$ "	3 $\frac{1}{8}$ "	4 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	17"	10613	10614	10615	10616
EC-100	8310	100	8 $\frac{1}{2}$ "	3 $\frac{5}{8}$ "	5 "	6 "	18"	10609	10610	10611	10612
EC-150	8315	150	9 $\frac{1}{2}$ "	3 $\frac{1}{2}$ "	5 $\frac{1}{2}$ "	6 $\frac{1}{2}$ "	20"	10605	10606	10607	10608
EC-200	8320	200	10 $\frac{5}{8}$ "	4 "	6 $\frac{1}{4}$ "	7 $\frac{1}{4}$ "	22"	10601	10602	10603	10604
EC- 50	8305	60	6 $\frac{1}{2}$ "	3 $\frac{1}{8}$ "	7 "	7 "	17"	10613	10614	10615	10616
EC-100	8310	100	7 "	3 $\frac{5}{8}$ "	8 $\frac{1}{4}$ "	8 $\frac{1}{4}$ "	18"	10609	10610	10611	10612
EC-150	8315	150	7 $\frac{1}{4}$ "	3 $\frac{1}{2}$ "	9 "	9 "	20"	10605	10606	10607	10608
EC-200	8320	200	8 "	4 "	10 $\frac{1}{2}$ "	10 $\frac{1}{2}$ "	22"	10601	10602	10603	10604
EC- 52	8255	60	5 $\frac{7}{8}$ "	5 "	5 "	6 "	18"	10678	10679	10680	10681
EC- 74	8277	100	6 $\frac{1}{2}$ "	7 $\frac{1}{4}$ "	7 $\frac{1}{4}$ "	8 $\frac{1}{8}$ "	25"	10682	10683	10684	10685

ARTIFICIAL SKYLIGHT LIGHTING

Skylights may be real skylights to also transmit daylight, or they may be "false skylights" for only artificial lighting. The selection of proper reflectors is necessary for correct lighting in both.

X-Ray Reflectors for mounting above skylights are of three types—distributing, semi-concentrating and concentrating. The distributing type is used generally, unless the lighting requirements call for concentration on the floor area or working plane, or where directional lighting is used as in art galleries.

The particular problem in skylight lighting is to provide uniform distribution of light on the glass and to conceal individual light sources from the observer below.



Fourth Church of Christ, Scientist, Detroit, Mich.

WESTON AND ELLINGTON, Architects
Combination cove and skylight lighting. Decorative skylight relieves the flatness of the ceiling.

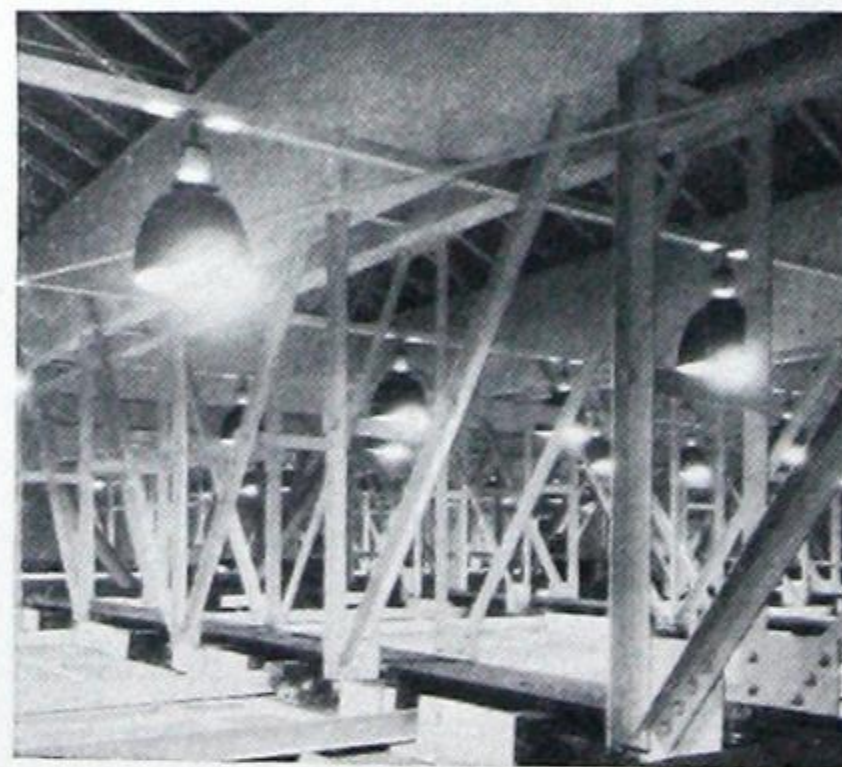
Types of Skylights

Photographs on these two pages show that skylights can be built structurally plain with either flat or curved ceiling. Increasing the width of ribs between glass panels oft times makes considerable improvement in the general appearance. Ornamental or moderne designs offer many possibilities.



Moderne "False Skylight" in Store Auditorium, T. Eaton Company, Ltd., Toronto, Can.

ROSS & McDONALD, Architects
SPROAT AND ROLPH, Associates
X-Ray Distributing Reflectors used.



View above typical skylight shows X-Ray Reflectors installed on CurtiStrip wire channel. Rigid construction of CurtiStrip saves time in installation. "Cat walk" is just behind structural steel cross braces.

Feed wires are brought up to fewest number of distribution panels making considerable saving in cost of wiring.



Upper Lobby, Midland Club, Chicago, Ill.

VITZTHUM & BURNS, Architects

The effect of sunshine from X-Ray Distributing Reflectors above skylight of amber tone emphasizes the hospitality and character of interior.

General Installation Problems

Arrangement of supports, or construction of both skylight and space above it sometimes makes installation of equipment a problem.

Equipment should be almost completely wired and assembled on the bench and installed quickly and easily, using standard fittings. CurtiStrip (see page 17) wiring channel fits this very purpose.

The large wire carrying capacity of CurtiStrip and flexibility of fittings makes it particularly adaptable and economical for skylight lighting. This means fewer distribution panels, lower wiring costs.



No. 24

One of the standard CurtiStrip bracket assemblies for skylight lighting equipment

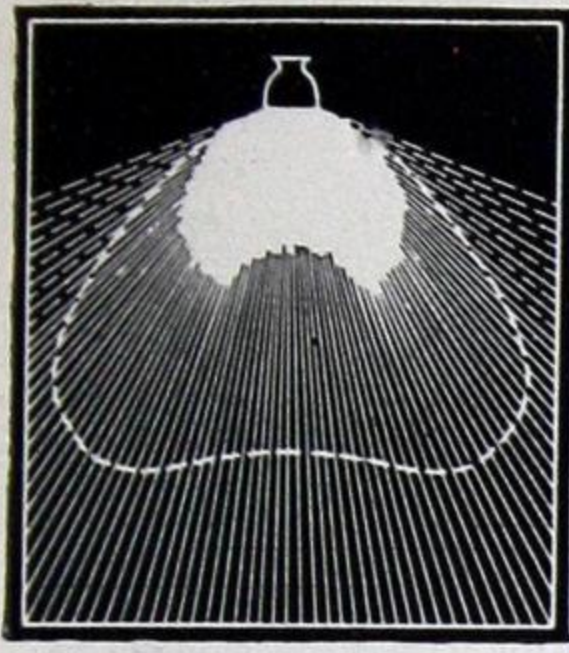


Metropolitan Museum of Art, New York, N. Y.

Distributing X-Ray Reflectors above rippled glass skylight.

Planning Skylight Lighting

Diagram and tables below give data and dimensions to assist in planning skylight lighting.



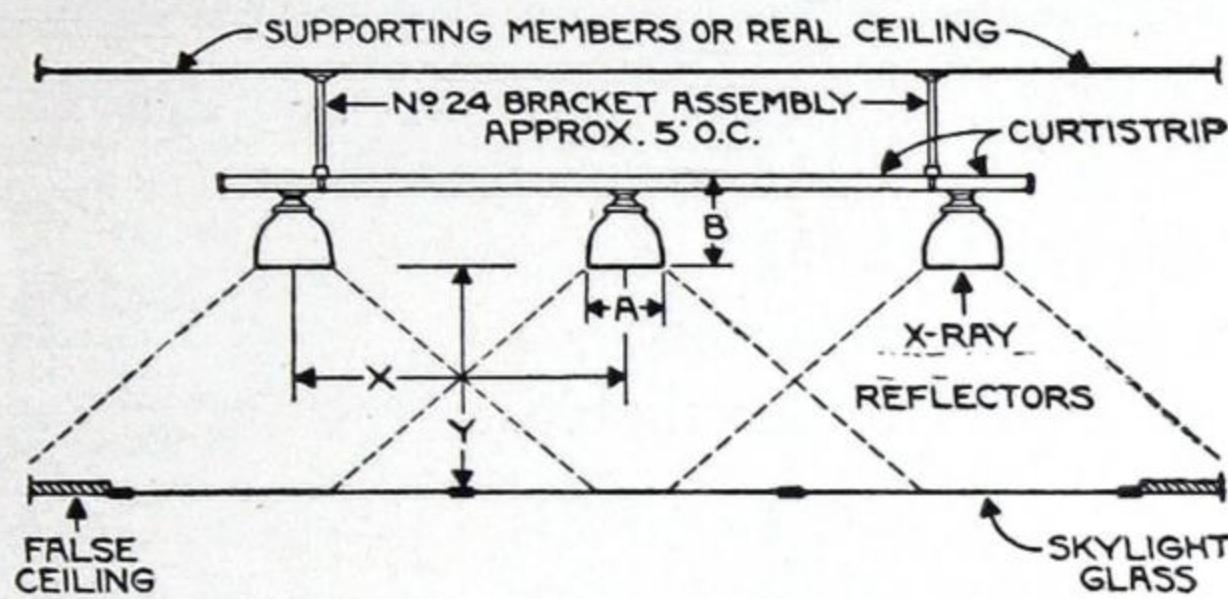
Distributing
Distributing type X-Ray Reflectors produce wide spread of light, uniformly distributed within angle of approximately 90°.



Semi-Concentrating
Semi-concentrating X-Ray Reflectors have greatest concentration within approximately 40°.



Concentrating
Concentrating types of X-Ray Reflectors provide maximum concentration in center beam at approximately 15°.



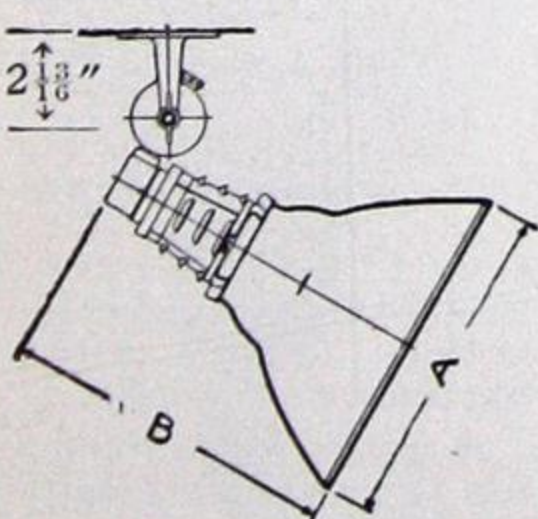
No. 570 Reflector



No. 710 Reflector



No. 33-A Reflector



General Lighting

For an intensity of approximately 15 foot-candles on the working plane, provide 4 watts per square foot of floor area, when glass with a transmission of 75% is used in the skylight. See Pages 4 or 16 for factors of light transmission through glass.

DISTRIBUTING X-RAY REFLECTORS

The distance "X," shown in the diagram above must never be greater than 1½ times "Y." Distributing table follows:

Reflector No.	Wattage	Dimensions	
		A	B
3	60	4½"	6½"
535	100	5½"	8½"
570	150	8"	10½"
575	200	9¾"	11½"
585	500-300	11¾"	20"
54	1500-750	16½"	28"

SEMI-CONCENTRATING X-RAY REFLECTORS

Distance "X" shown in the diagram above must never be greater than ¾ of "Y." Semi-concentrating table follows:

Reflector No.	Wattage	Dimensions	
		A	B
696	100-60	8¾"	8"
700	150	10"	9"
710	200	11½"	10"
848	500-300	13¼"	18"
590	1500-750	20"	26"

Directional Lighting

The two art galleries shown at the right, with their diagrams, illustrate general method of planning Directional Lighting. Suggestions under each cut give general data.

Wattage Required for Directional Lighting—50 to 100 watts per running foot of side wall are recommended. For average ceiling height 100 watts provide approximately 30 to 40 foot-candles on the wall.

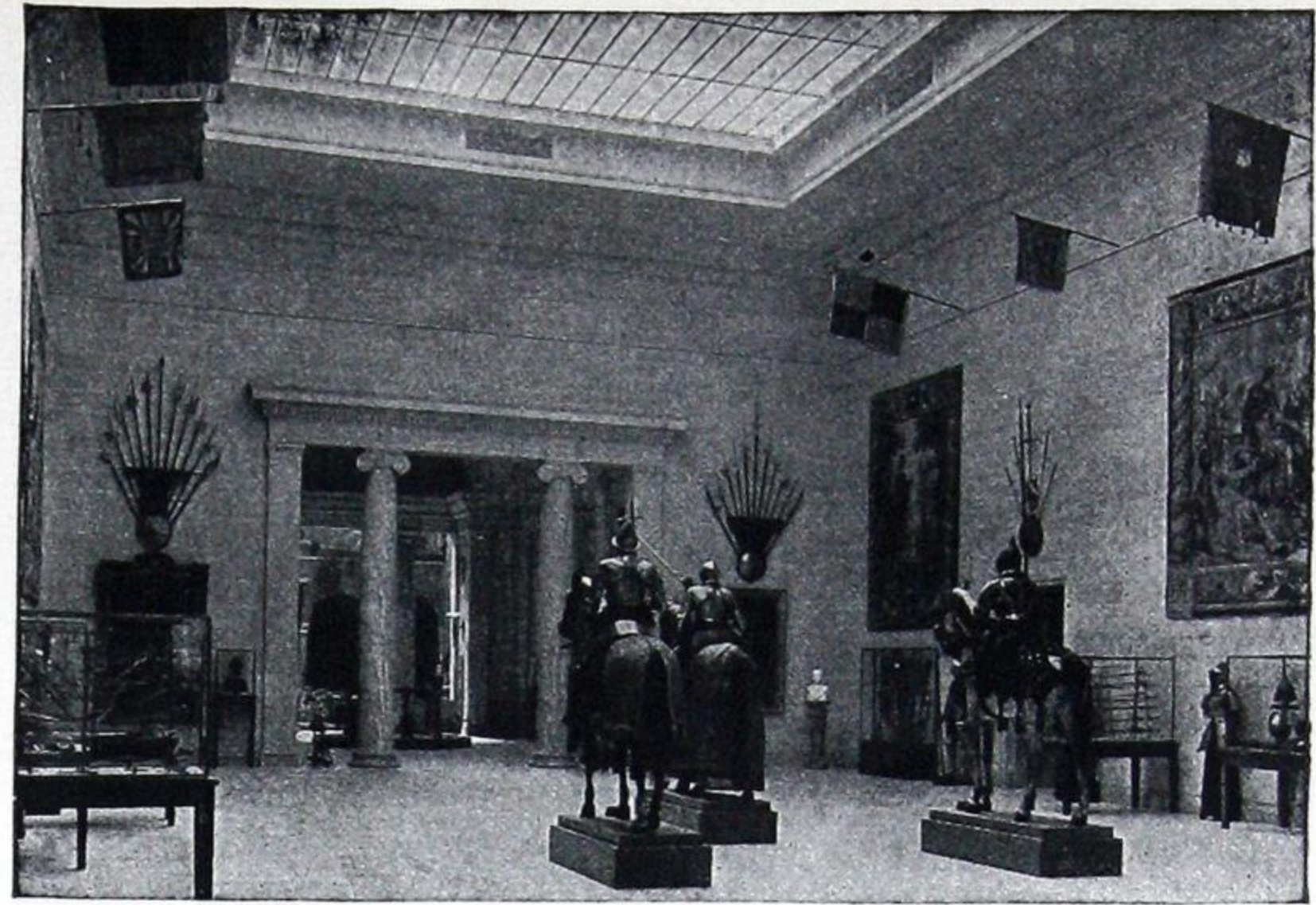
X-RAY INTERIOR FLOODLIGHTS

(Additional details on Page 23)

Cat. No.	Lamp size	Dimensions	
		A	B
Semi-concentrating Type			
338	200-watt	10½"	9¾"
Concentrating Center Beam with Flood			
44	100-watt	8⅝"	8"
33-A	200-watt	10½"	10¾"

These units are all mounted on swivel base to make adjustment easy.

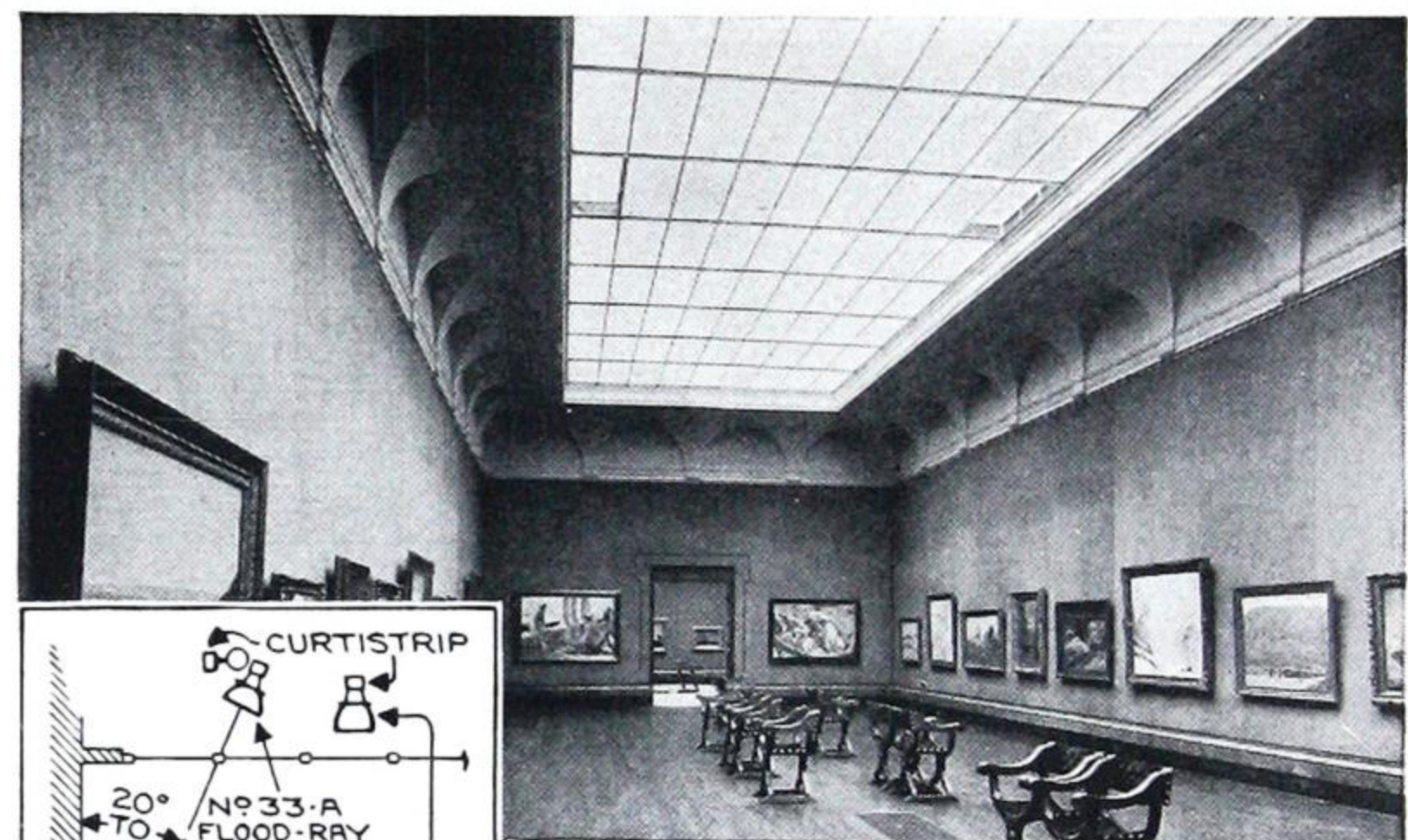
FOR ADDITIONAL SUGGESTIONS AND [8] DATA REFER TO THE LIGHTING BOOK



Court of Tapestries and Armory, Cleveland Museum of Art

HUBBELL and BENES, Architects

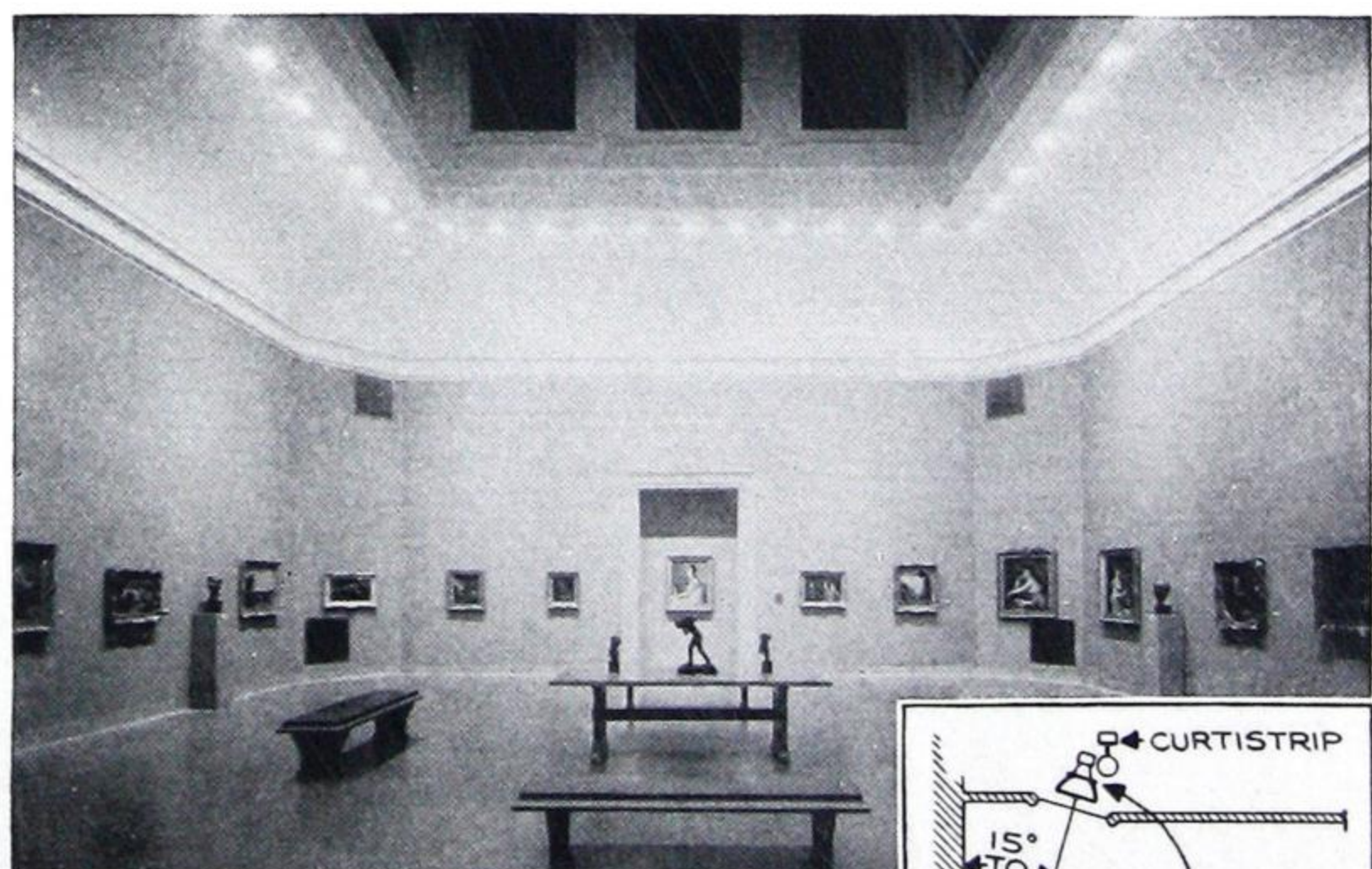
Lighted with distributing type X-Ray "Beehive" Reflectors.



Directional Lighting

For art galleries this general type X-Ray No. 33-A is mounted on CurtiStrip 33 in. above glass as shown in diagram. The center portion of the skylight is planned on the same principle as skylight requiring general distributing types of reflectors—(see diagram in left column).

For general lighting of center portion of skylight, so as to have entire glass illuminated, provide ½ watt per square foot.



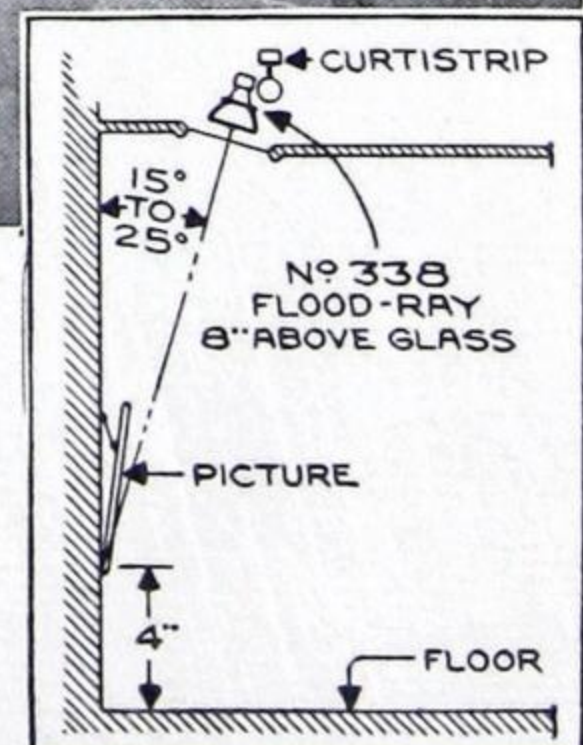
Baltimore Museum of Art

JOHN R. POPE, Architect

HENRY ADAMS, Consulting Engineer

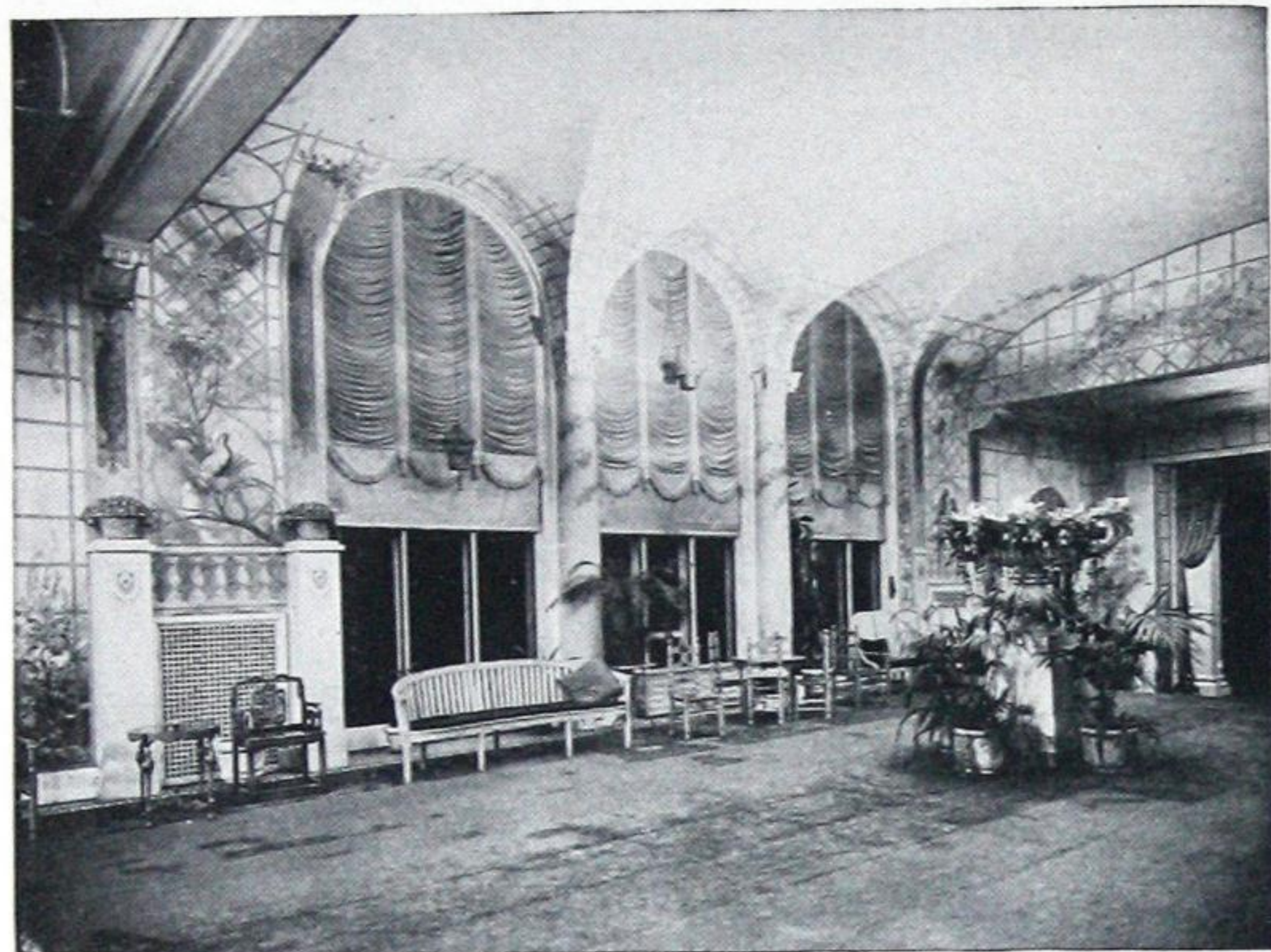
Where art galleries have a skylight or "light-well" for day-light lighting as used above, X-Ray No. 338 "Floodray" (as shown in diagram), is mounted individually. These may be recessed using hinged ceiling rim shown on Page 25.

For ceilings up to 14 ft. high, X-Ray No. 44, using 100-watt lamps, may also be used.



LIGHTING FROM PEDESTALS, REFLECTOR LAMPS, WALL URNS

One of the interesting departures from the conventional type of lighting for completely illuminating the room with pleasing indirect lighting is the use of X-Ray Reflector equipment concealed in Pedestals, Reflector Lamps, Wall Urns, "Built-into-Furniture," or on the tops of wall cases.



Promenade, South Shore Country Club, Chicago, Ill.
MARSHALL and FOX, Architects
Ornamental floor pedestals, containing X-Ray EC-344 Reflector units, using 500-watt lamps light this space.

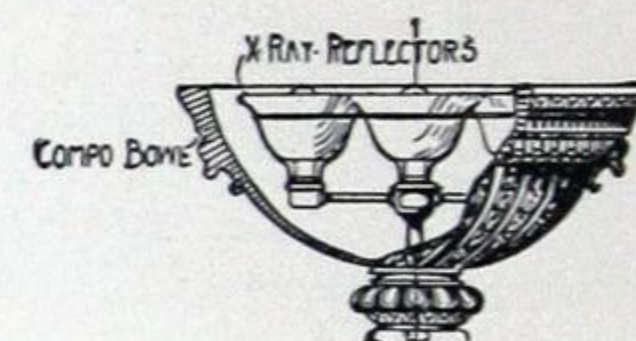


Parkside Candy Company, Buffalo, N. Y.
G. MORTON WOLFE, Architect
The pedestals (Design No. 6650-X) supplement cove units for lighting this high class shop.

Pedestal Lighting

Various designs and sizes of standard pedestals are available.

Planning Wattage and Proper Spacing—Spacing between pedestals should not exceed five times the distance from top of pedestal to the ceiling. To produce 6 foot-candles requires approximately 2 watts per sq. ft. of floor area.



EC-344 X-Ray Reflectors are concealed in pedestals for "Eye Comfort" Indirect Lighting.

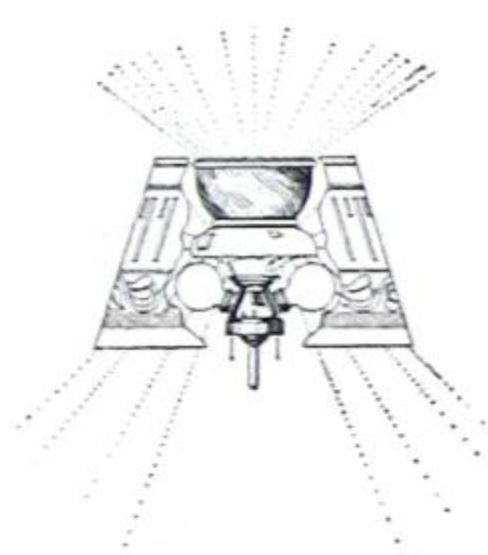
Reflector Lamps Equipped with Curtis Adapters

Four types of Curtis Adapters provide indirect lighting with portable lamps wherever the less formal atmosphere seems desirable.

Planning Wattage and Proper Spacing—

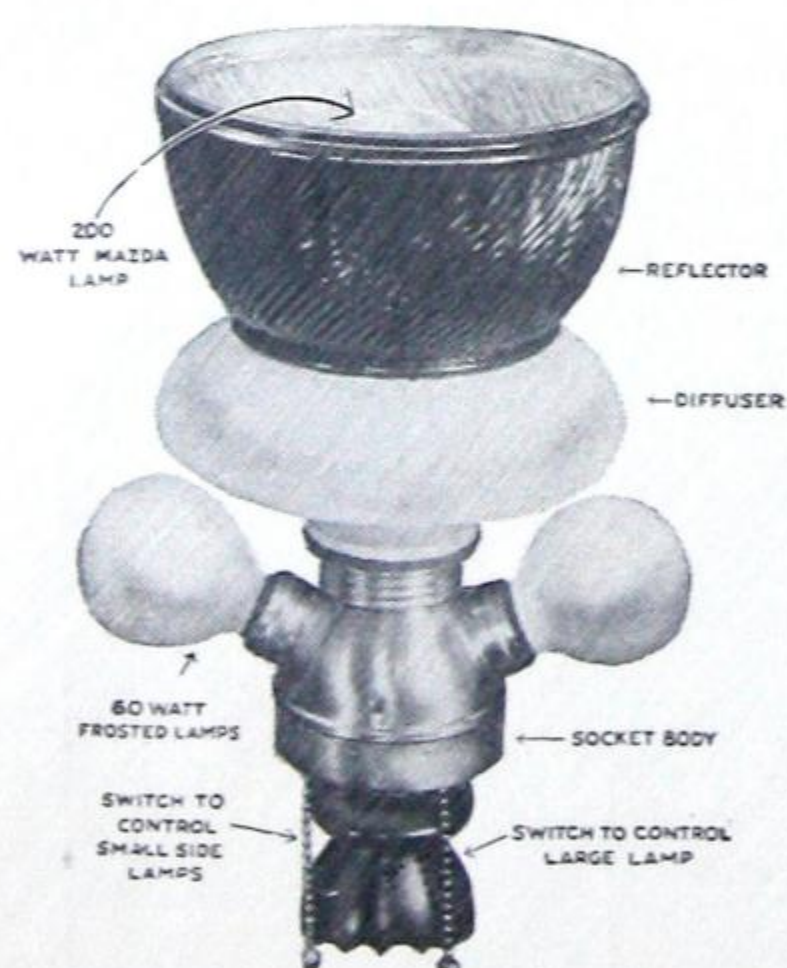
For Home Lighting—For indirect illumination, $\frac{1}{2}$ to 1 watt per sq. ft. of floor area. Interiors with dark furnishings may need a higher intensity to obtain the desired effect.

For Commercial Lighting—The wattage is figured on the same basis as lighting from ceiling fixtures, using as an average from 2 to 4 watts per sq. ft.



Curtis Adapters Concealed Within the Shade

These make possible direct or indirect lighting, or a combination of both.



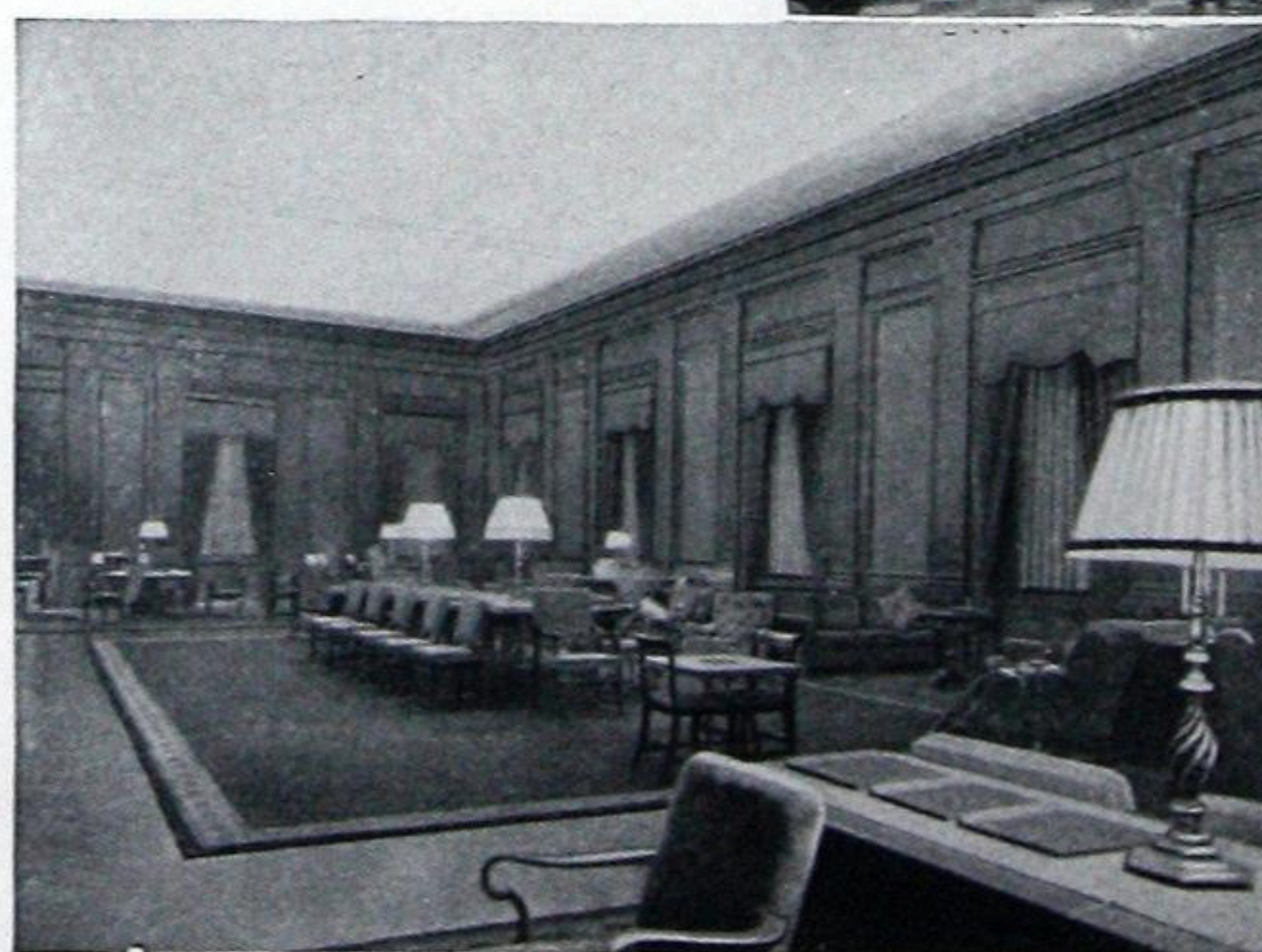
Curtis Adapters Nos. 3000 and 2852
Have two pull chain switches.

Nos. 3000 and 2852 produce two effects: Local lighting and general indirect illumination—or a combination of both

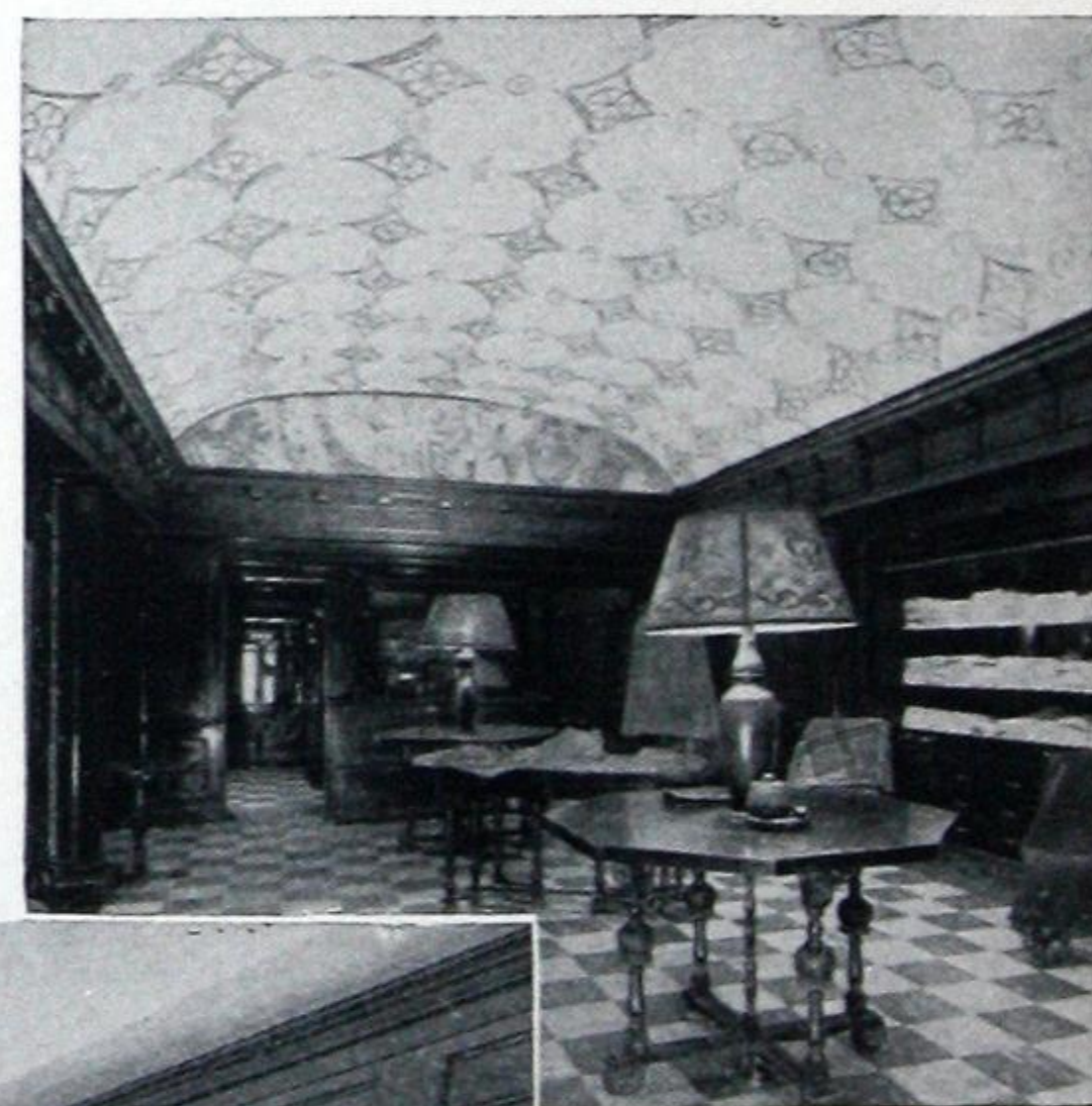
Catalog No.	No. and size of lamp for indirect lighting
2852	One 500 or 300 watt
3000	One 200, 150 or 100 watt

Nos. 2700 and 2848 are suited to "candle type" portables, and where permanent Indirect Reflector Lamps with luminous shades are used as in shops, etc.

Catalog No.	No. and size of lamp for indirect lighting
2700	One 200, 150 or 100 watt
2848	One 500 or 300 watt



Portable lamps equipped with Curtis Adapters are ideal for clubs. Two types of lighting may be had: local or complete indirect lighting throughout the room.

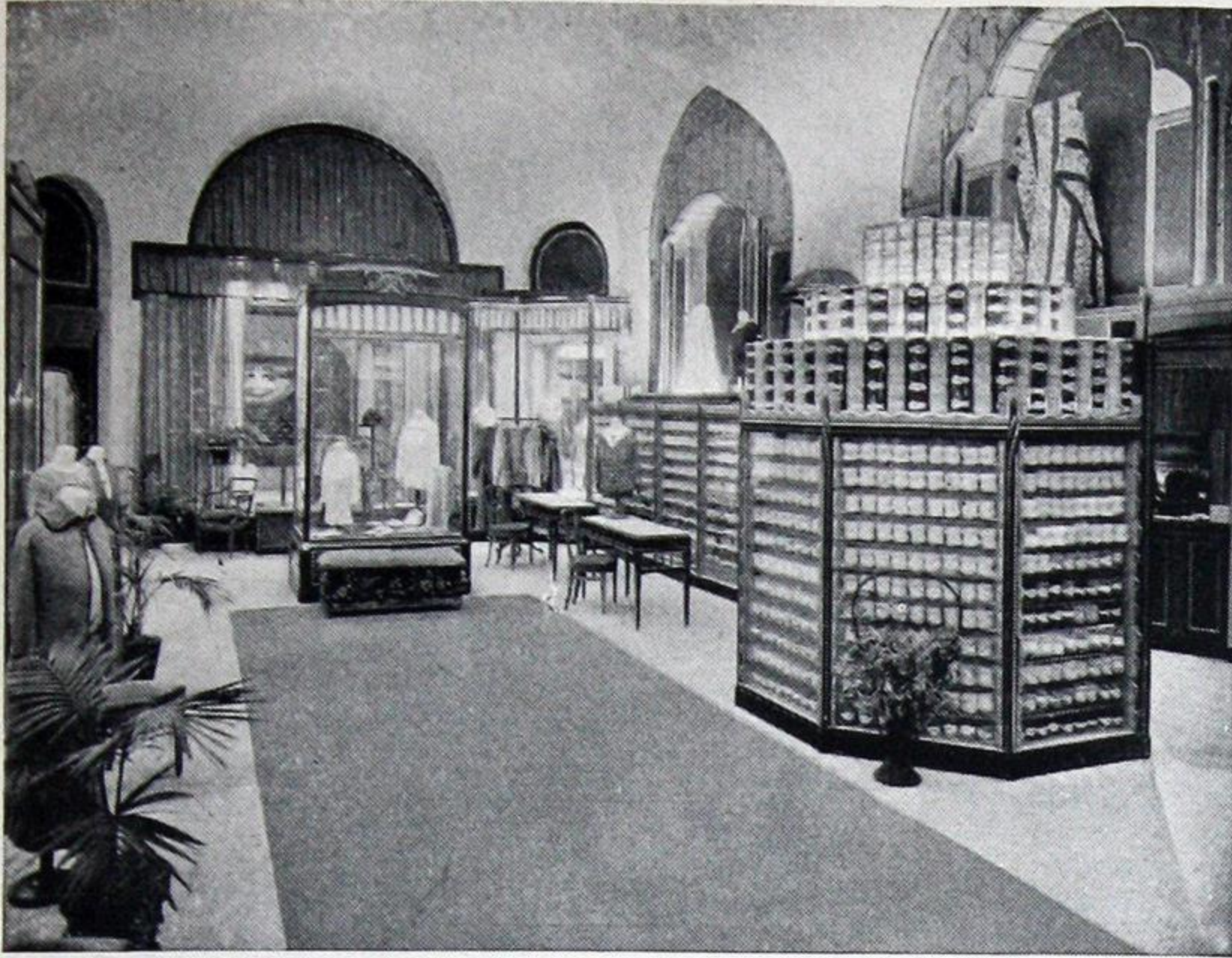


Above:

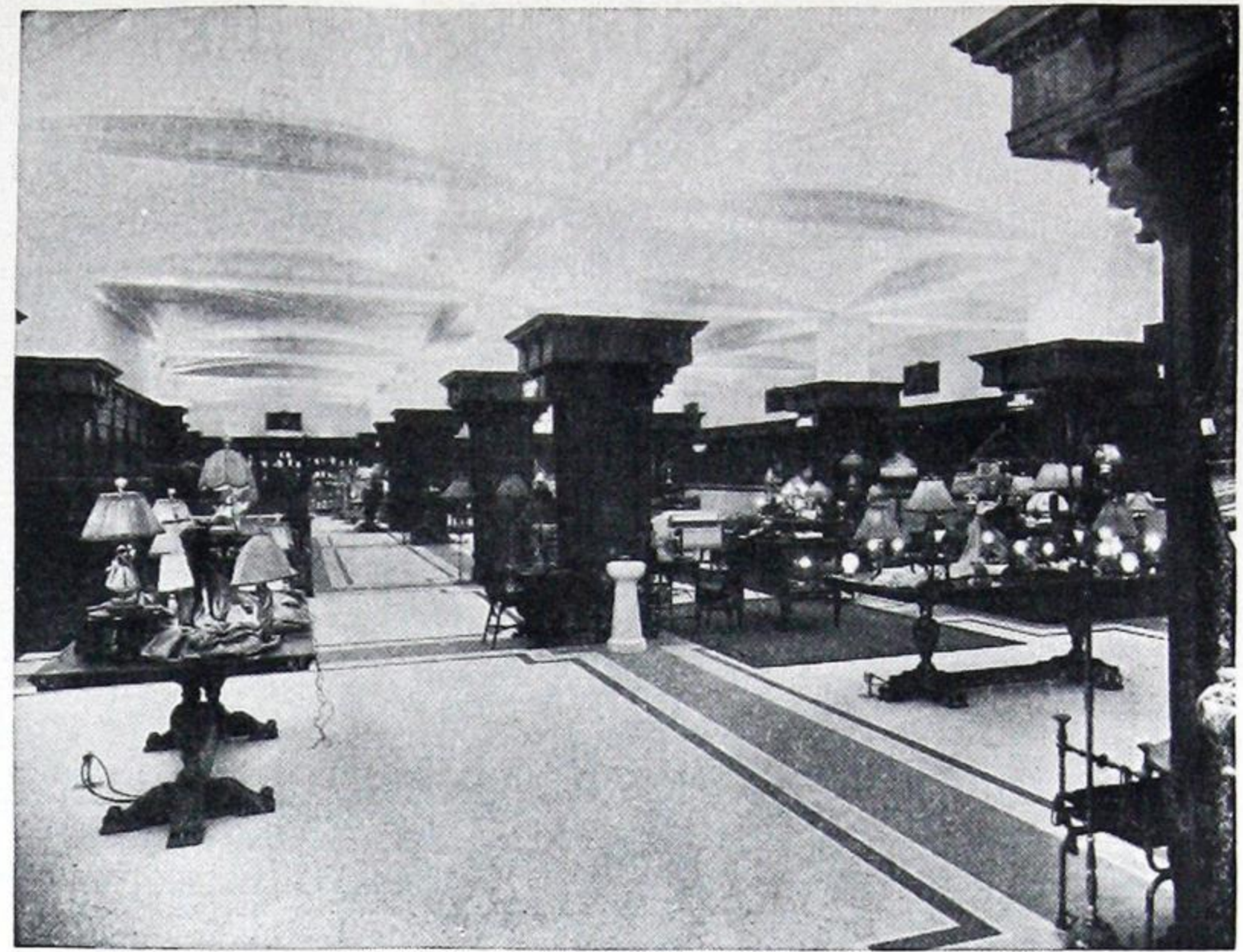
Finchley's Men's Store, New York, N. Y.
BEVERLY KING, Architect

The entire store is lighted by lamps equipped with the Curtis Indirect Adapter mounted on pottery bases with parchment shades.

A distinctive method for a merchandising establishment.



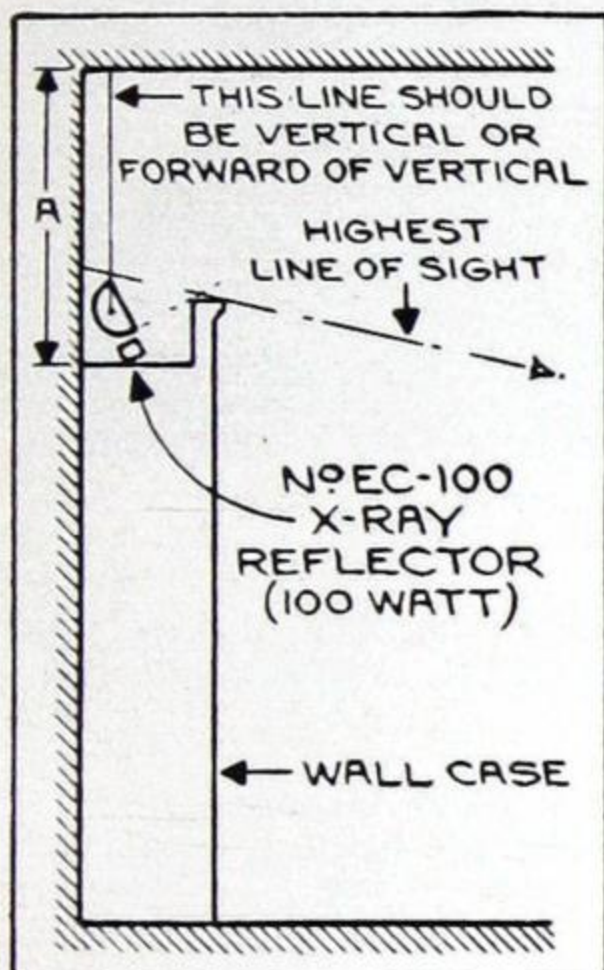
Shop Designed by McLanahan & Benckner of Philadelphia, Pa. Display cases afford opportunity for concealing lighting equipment and provide illumination in harmony with the treatment of the interior.



Column Lighting, Main Electrical Display Room of the Union Electric Light & Power Company, St. Louis, Mo.

ALBERT GROVES, Architect

A splendid example planned by the cove lighting method. See Pages 5 and 6.



Lighting from tops of wall cases generally accomplished by using EC-100 X-Ray Reflector units. See Pages 5 and 6

"Built-into-Furniture" Lighting

Building lighting into furniture produces a unique and pleasing atmosphere.

Suitable for shops and stores; museums, hotel lobbies, railroad waiting rooms, school science rooms, laboratories, etc.

Planning Wattage and Proper Spacing—In general EC-100 Reflector mounted on CurtiStrip is recommended for this type of lighting. Approximately 5 watts per sq. ft. will produce 15 foot-candles. The number of reflectors and location in which reflectors are mounted determines the spacing.



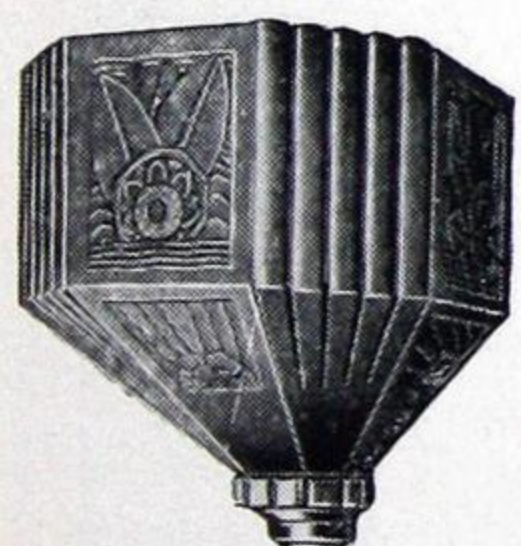
Moderne Urn No. 5721-G fits into this atmosphere at F. Schumacher & Co., New York, N. Y.

Indirect Wall Urns

X-Ray EC-68 Reflector was developed to efficiently meet the requirements of short coves, where rooms are lighted by reflectors in wall urns or wall boxes. Its special design provides the exact light control for this particular type of lighting problem.

Planning Wattage and Proper Spacing—Lighting from wall urns and wall boxes is worked out in much the same way as cove lighting; (see pages 5 and 6). Spacing between units should not be greater than five times the distance from the ceiling to the top of the urn or box.

Wattage for lighting from wall boxes or urns should be approximately one and one-half times the wattage for indirect lighting from fixtures; (see pages 15 and 16).



5721-G Urn
5792-G Wall Box



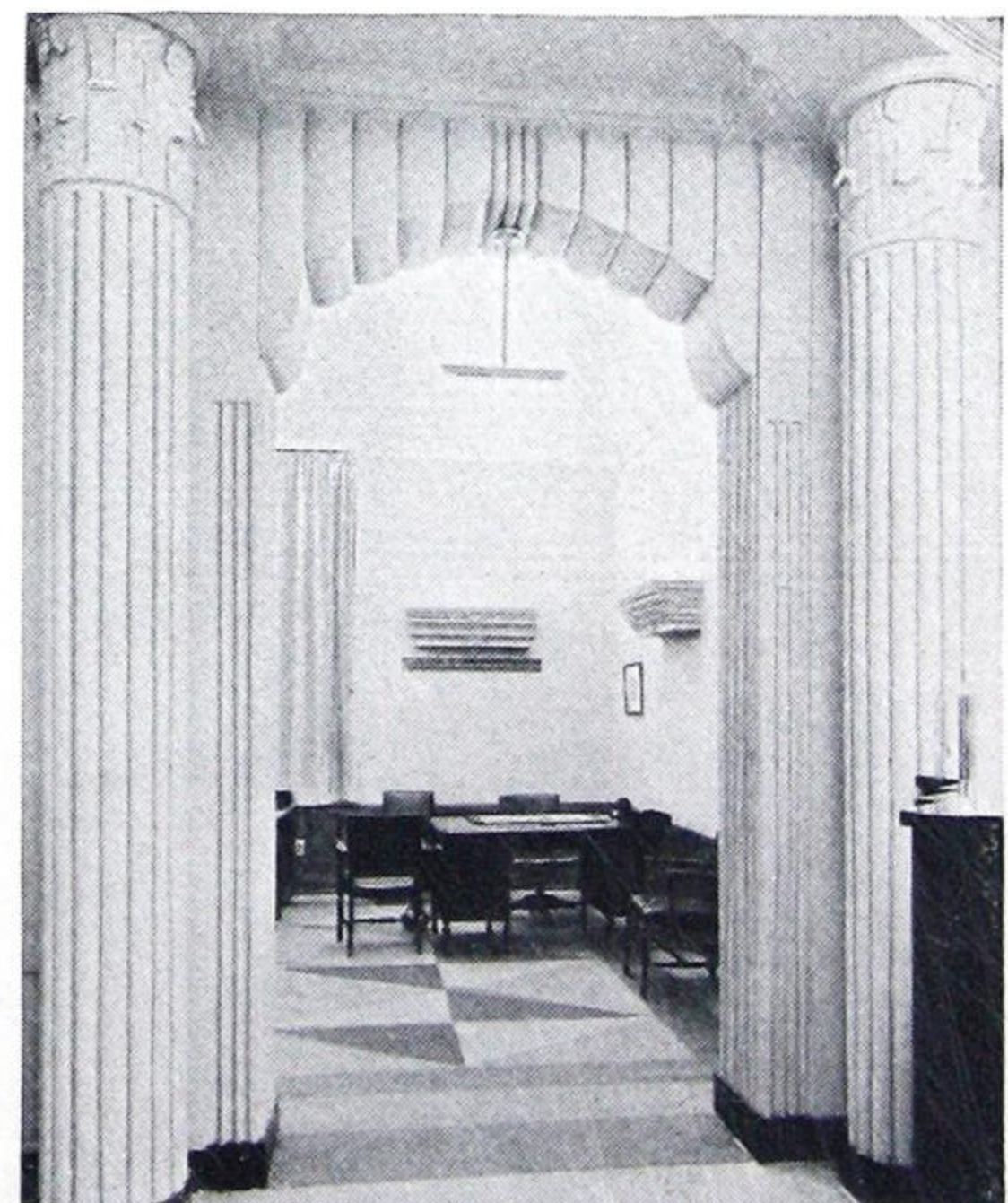
EC-68
Reflector



5461-G
Urn

Catalog No.	No. and size of lamps	Extends	Width at wall	Height at wall
8237-EC68 Reflector Unit only	One, 200-watt	10 $\frac{7}{8}$ "	10 $\frac{7}{8}$ "	8 $\frac{3}{8}$ "
5461-G Urn	One, 200-watt	12 $\frac{1}{4}$ "	9 $\frac{3}{4}$ "	17 $\frac{3}{4}$ "
5721-G Urn	One, 200-watt	11 $\frac{1}{2}$ "	13 $\frac{1}{4}$ "	14 $\frac{1}{2}$ "
5792-G Wall Box	Two, 200-watt	11 $\frac{3}{4}$ "	30"	14 $\frac{1}{2}$ "

Other standard urns and wall boxes, having capacity of one to three 200-watt lamps are also available in Gothic, Adam, Greek, Italian and Classic Design.



Niagara Electric Service Corporation,
Niagara Falls, N. Y.

KIRKPATRICK & CANNON, Architects
WM. A. MALONEY, Electrical Engineer
Wall boxes each contain two EC-68 X-Ray Reflectors.

LUMINAIRES

Combining Utility and Design

Luminaire Studios of CURTIS LIGHTING specialize in designing equipment harmonizing with the architectural design and insuring the right atmosphere or effect to properly interpret the spirit or design of the interior.

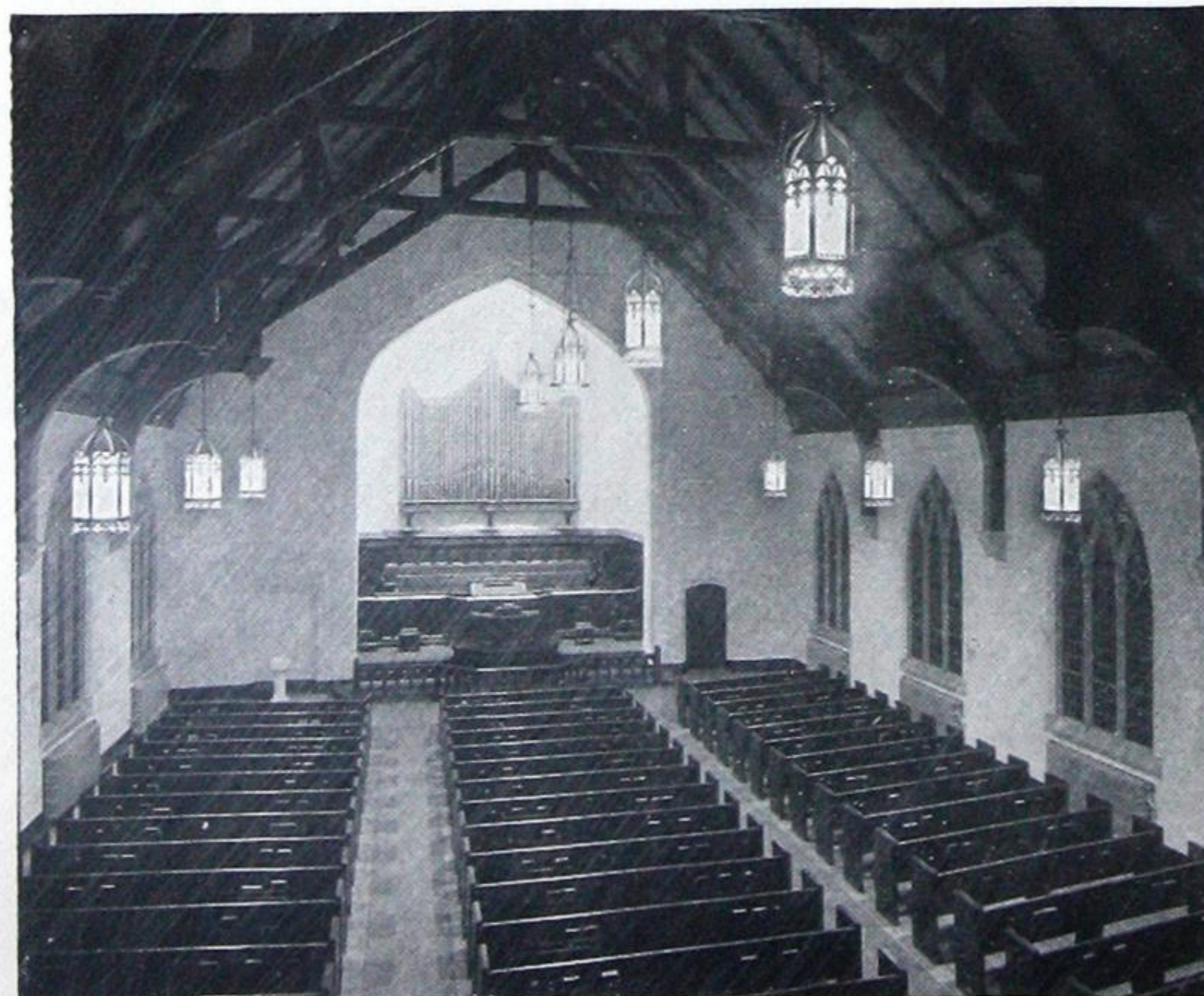
Curtis Designers and Engineers rank among the foremost. In addition to their experience of combining utility and design, they have the famous Curtis-Winslow Library. This is one of the finest design collections. It contains many original etchings and details on all types of architecture, including recent additions in the Moderne.

Photographs of interiors with luminaires designed to harmonize and provide proper lighting are shown on these two pages. It is impossible

to make here an elaborate presentation of the complete services of Curtis Luminaire Studios or "Planned Lighting" that is available, but it is hoped that these examples will be of sufficient interest to stimulate the urge for the Architect to make use of the service of Curtis Designers and Engineers placed at his disposal.

Lanterns

Pendant Lanterns have a broad application. The group shown at the right are four types of Gothic. These are hexagonal in shape and are wrought and cast of iron. As regularly supplied they are equipped with an X-Ray Reflector for providing controlled-direct lighting, as shown in the photograph of the church below. They may also be used without reflector for lobbies, etc.



Curtis Lantern in Methodist Episcopal Church, Greensburg, Ind.
FOLTZ, OSLER & THOMPSON, Architects
The Curtis Lantern provides adequate lighting for church services and an interesting effect to the interior.



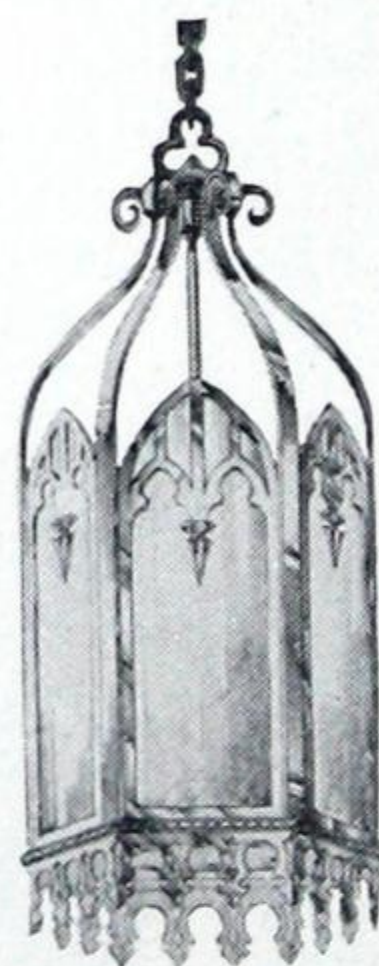
Bankers Trust Company, Atlantic City, N. J.

H. A. SROUT, Architect

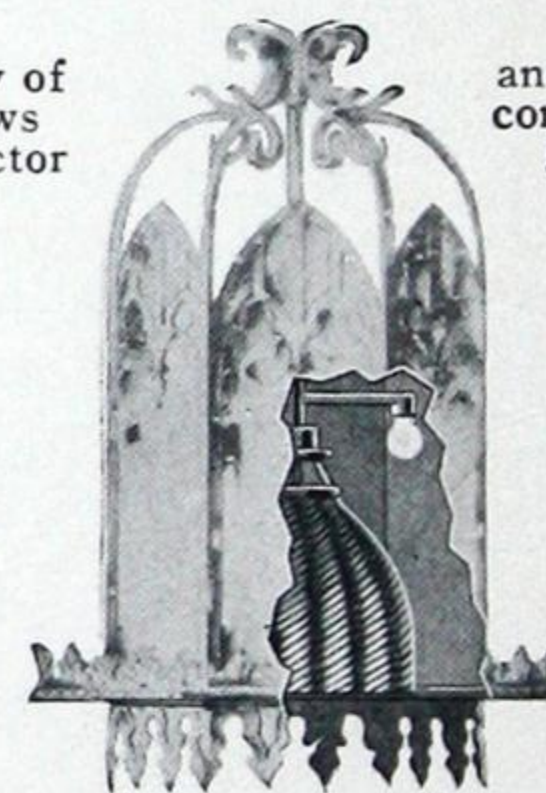
Special Curtis Luminaires designed to conform with the architectural treatment of the long narrow interior, supplement the skylight lighting.

Cutaway view of lantern shows X-Ray Reflector

and small lamps concealed behind glass panels.



No. 40002XH



Curtis Gothic Lanterns are hexagonal shape—18½ in. from side to side, 41 in. high with chain hanger of such length as is required. Cathedral diffusing glass, panels regularly supplied.

Lanterns are regularly supplied with X-Ray Reflector for 500 or 300-watt lamp, placed above the hinged panel of heat-resisting diffusing glass.

Planning Lighting with Lanterns—Spacing between outlets should not exceed one and one-half times the distance from floor to bottom of lantern. For churches, wire each outlet on two circuits (1—reflector, 2—small lamps). One watt per square foot will provide approximately 5 foot-candles; two watts, approximately 10 foot-candles.



No. 40203XA



No. 40037XH



No. 40013XC



Continental Illinois Bank & Trust Co.,
Chicago, Ill.
GRAHAM, ANDERSON, PROBST & WHITE,
Architects
Design No. 70249-A Curtis Indirect Lumi-
naire used in this banking room.

(Above) Design No. 70249-A
Luminous bowl indirect bronze Luminaire,
25 by 9 3/4 in. with opal amber cased glass
bowl. Capacity: four 200-watt lamps.

(At Right) Design No. 9224-XSS
Bronze with panels of sanded plate glass,
bright beveled edges, 18 by 39 in. Four-rod
hanger. Capacity: thirteen 25-watt lamps;
four 60-watt lamps.

(Below) Design No. 5721-G—Wall Urn
For one 200-watt lamp. See details on page 10.

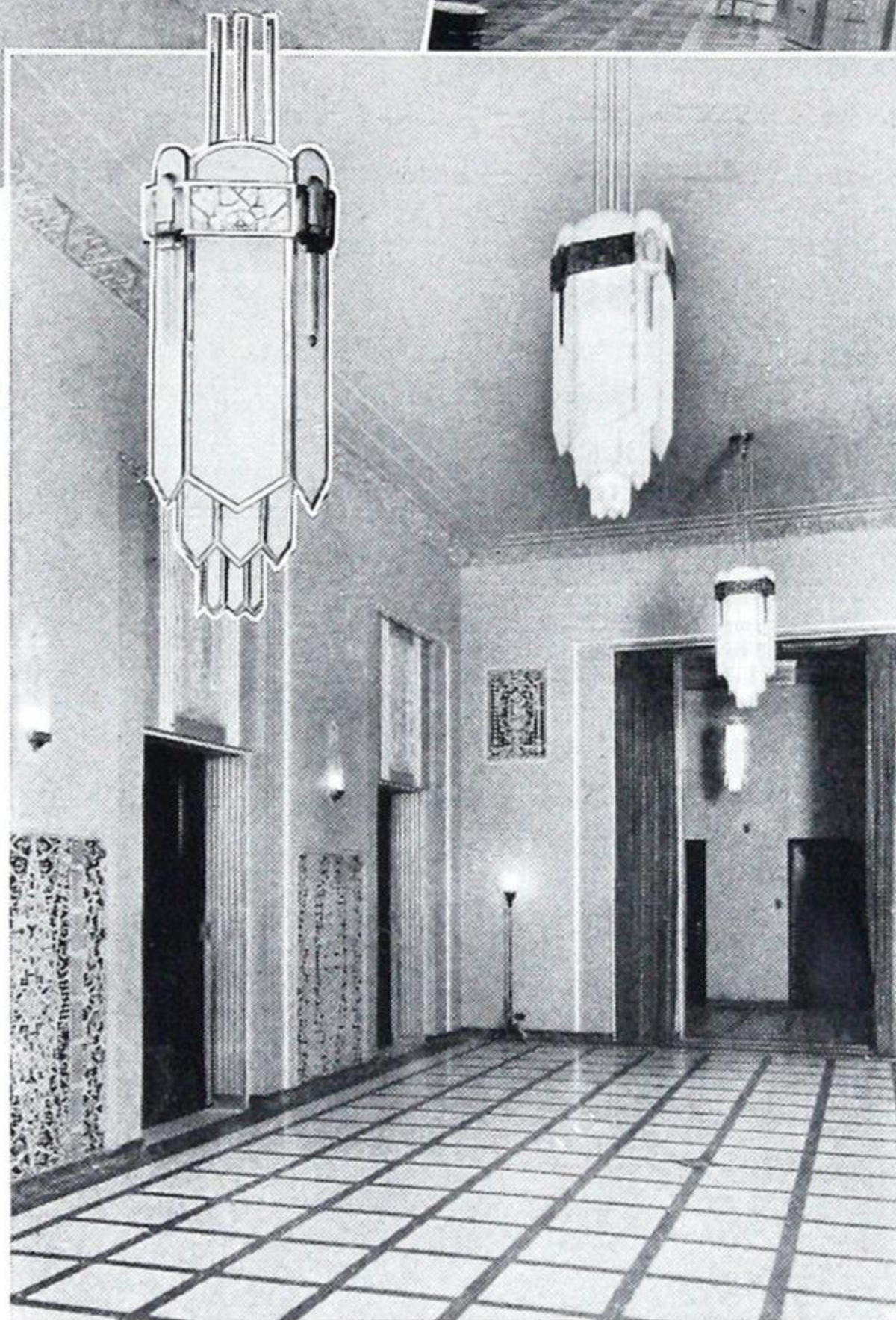
Design No. 5762—Fixture INDIRECT PENDANT FIXTURES

Opaque panels	Dimensions, in.		Luminous panels
	Diam.	Depth	
No. 5732	23 1/4	11 1/2	No. 5762
No. 5744	32	13 1/2	No. 5774
No. 5753	42	17 1/2	No. 5783

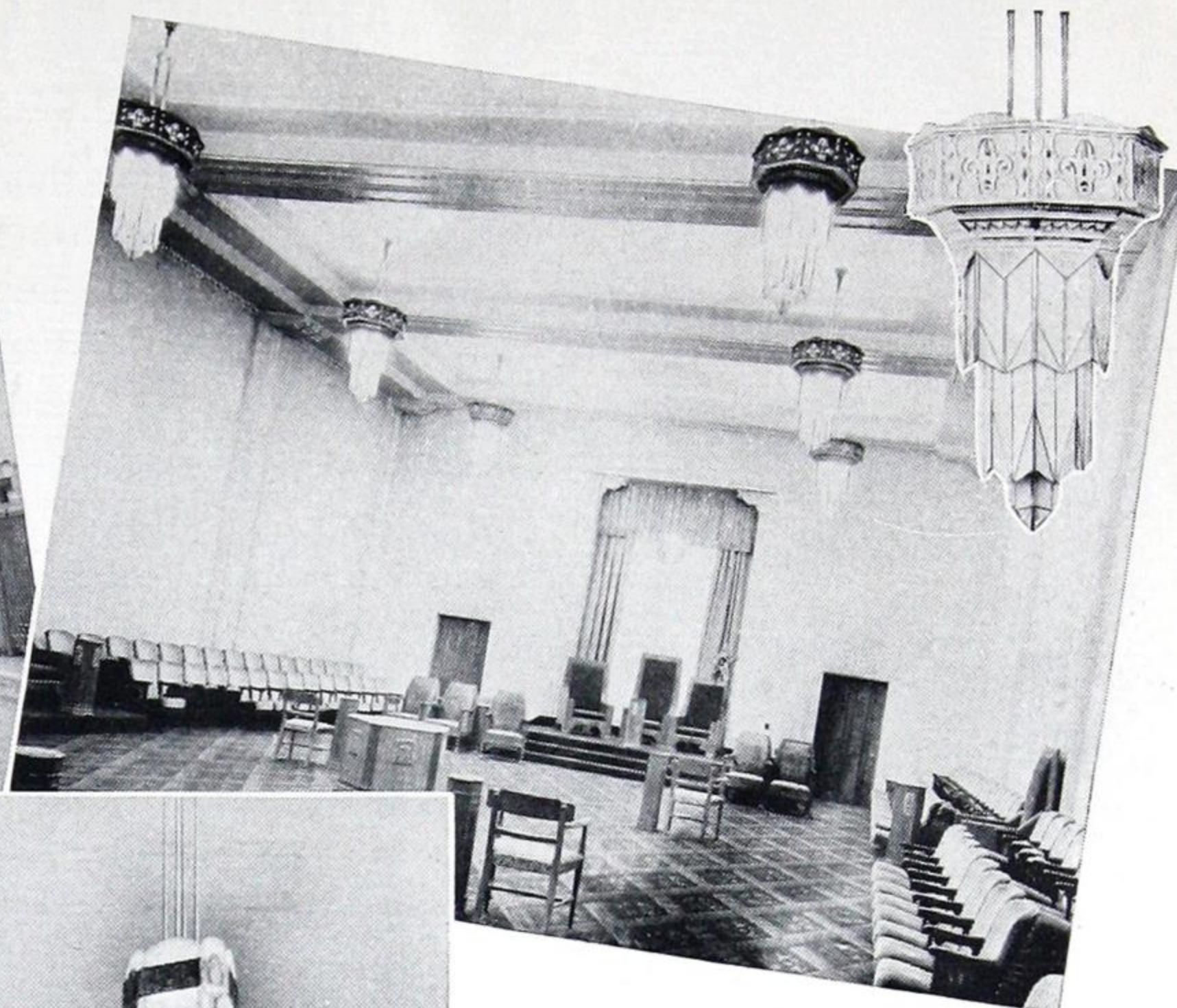
Capacities: Nos. 5732 and 5762—Two 150
or two, three or four 200-watt lamps.

Nos. 5744 and 5774—Four to eight 200-
watt lamps.

Nos. 5753 and 5783—Three to six 500-watt
or 300-watt lamps.



Decatur Masonic Temple, Decatur, Ill.
HOLABIRD & ROOT, Architects
Lobby lighted with Design No. 9224-XSS.



Masonic Temple, Rochester, N. Y.
OSGOOD & OSGOOD, Architects
Harmony in lighting and design with
Direct-Indirect Lantern No. 9765.

(Above) Design No. 9765-X
Direct-Indirect reinforced composition and
glass Lantern with open work rim, fin-
ished green bronze. Diameter, side to side,
31 in.; height, 37 1/2 in. Four-rod pilot
hanger. Four 200-watt lamps with X-ray
Reflectors for indirect lighting; one 300-
watt lamp for controlled-direct lighting.

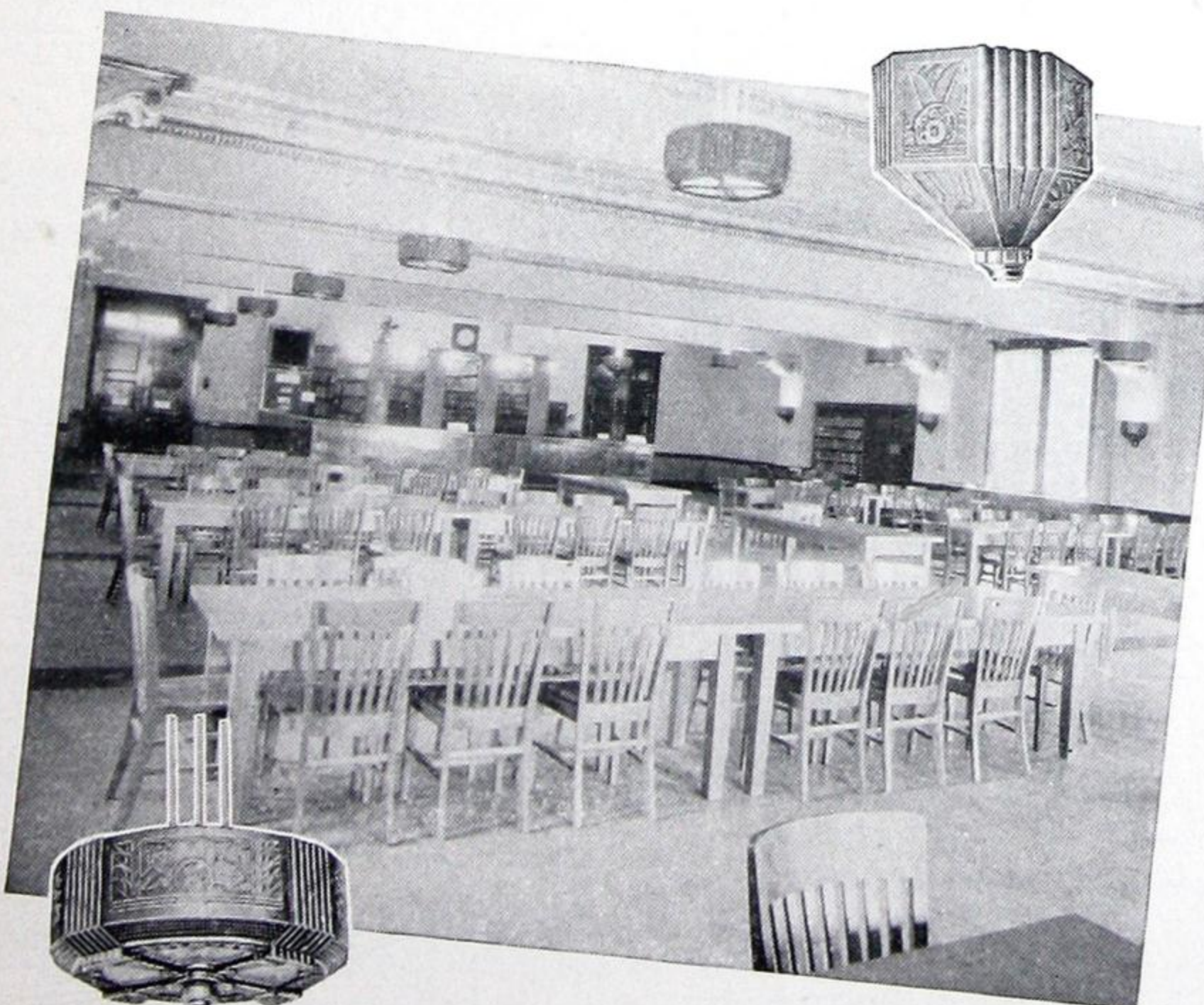
(Below) Design No. 90041-XA—
Wall Urn

Luminous type. 200-watts for indirect,
two 25-watt lamps to light glass panels.
Width, 14 3/4 in.; height, 20 in.; extends
9 1/2 in. from wall.

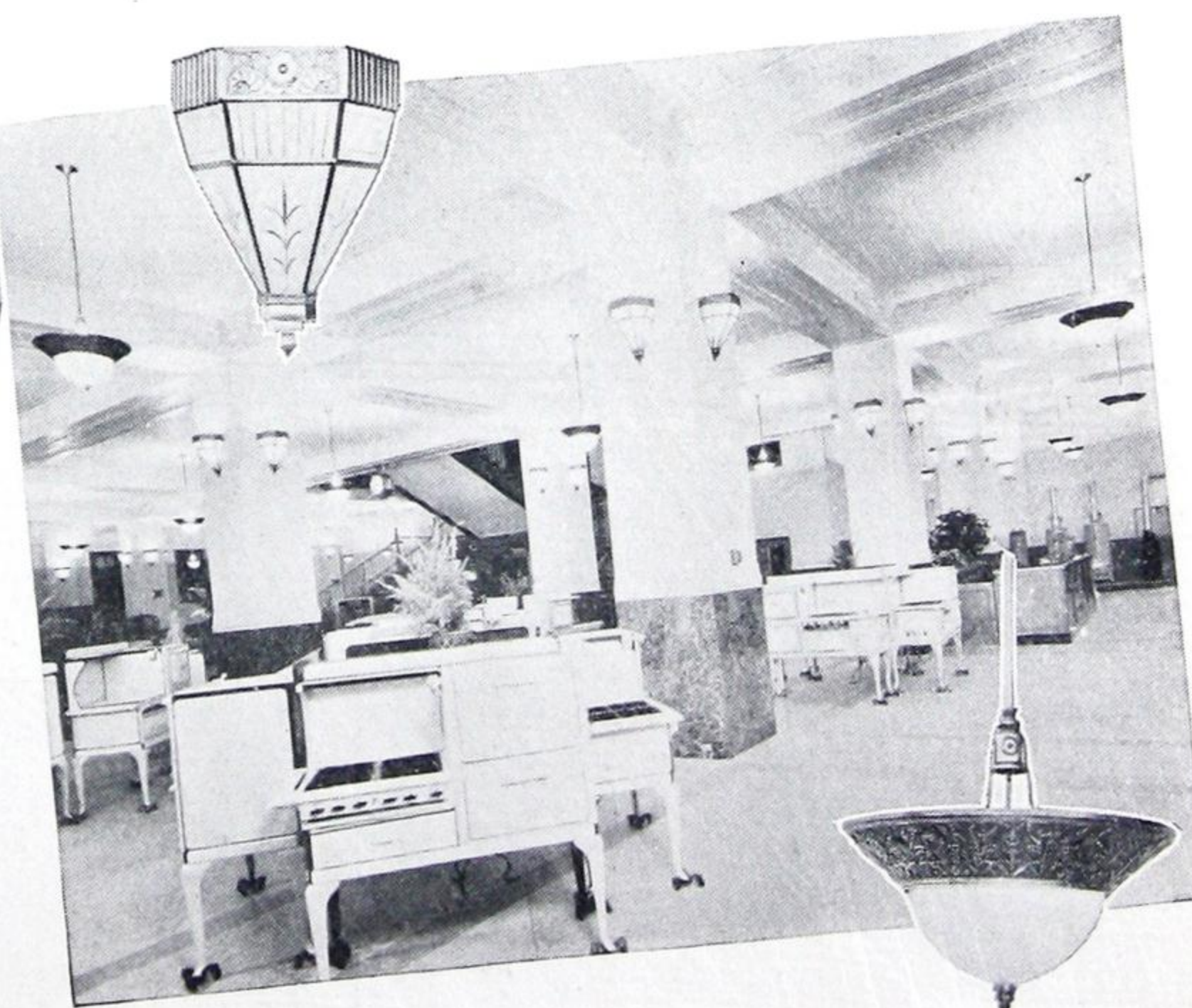
Design No. 70227-XA

Luminous bowl indirect bronze Lumi-
naire. 26 by 14 in. Single-rod suspension.
Opal glass bowl containing X-ray Reflector
with diffuser. Capacity: one 750, 1000 or
1500-watt lamp.

Many other Luminous Bowl Indirect
Luminaires are available in shallow or
deep types. Designs for simple or elabo-
rate interior.



Library, Western State Teachers' College, Macomb, Ill.
A combination of indirect pendant fixtures.
Design No. 5762 and indirect wall urns Design No. 5721-G.



Milwaukee Gas & Light Company, Milwaukee, Wis.
ESCHWEILER & ESCHWEILER, Architects
Luminous bowl indirect Luminaire Design No. 70227-XA
Wall urn Design No. 90041-XA.

CURTIS "EYE COMFORT" LUMINAIRES

For Indirect Lighting

The indirect lighting fixtures on this page are standard commercial units, popular for offices, drafting rooms, stores, schools, libraries, hospitals and wherever lighting that is the nearest approach to daylight is needed. These are a marked contrast to the types of "inverted" lighting fixtures introduced in 1908 when Mr. A. D. Curtis and Kenneth Curtis made the first demonstration of practical indirect lighting before architects and members of the Illuminating Engineering Society.

The bowl of each of these several sizes and shapes of modern indirect lighting fixtures contains one or more silver-mirrored X-Ray Reflectors, as shown in the cutaway views below at the right. This is the secret of the pleasing, comfortable indirect lighting.

Luminous bowl types Nos. 5701 and 4001 are truly indirect lighting fixtures. A small opal diffuser in the bottom of the reflector softly illuminates the glass bowl.

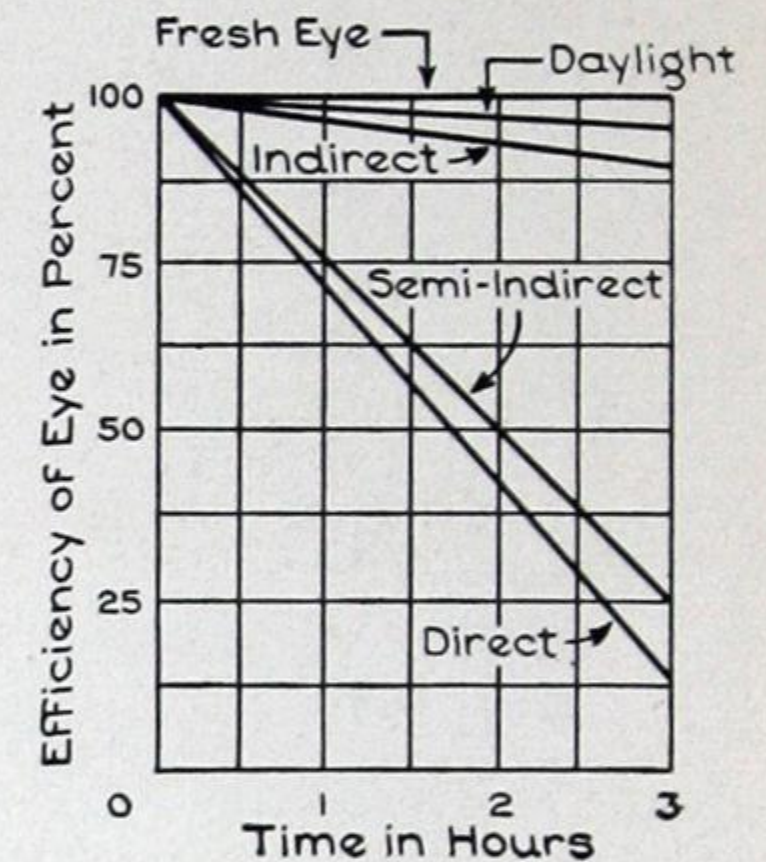
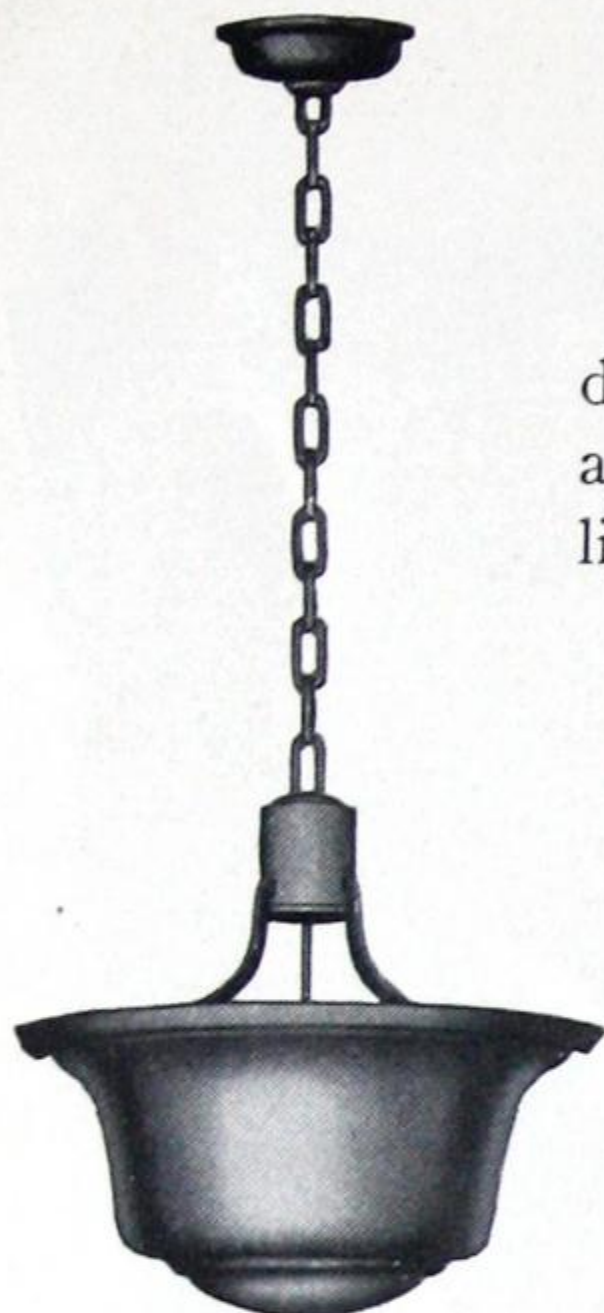
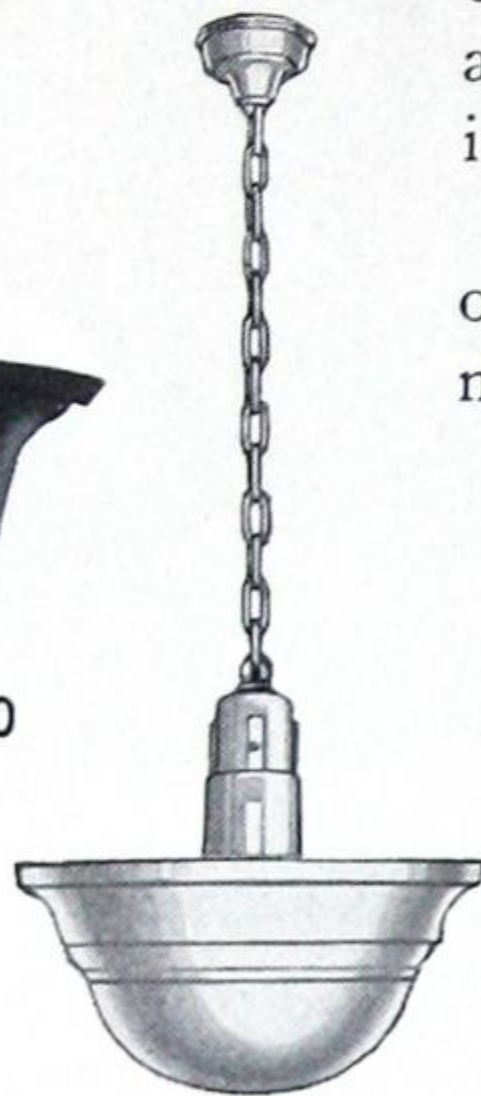


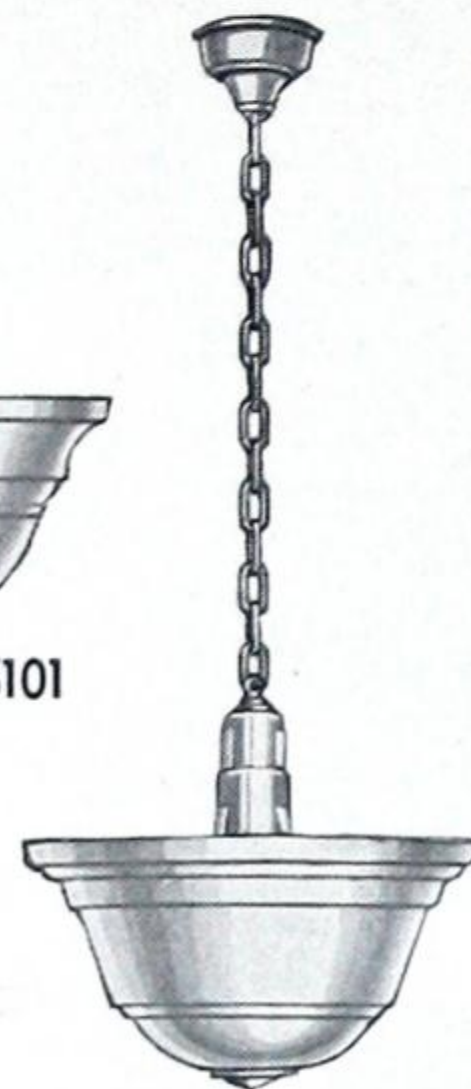
Chart of three-hour test by two eminent scientists shows how indirect lighting compares most favorably with daylight. Curtis Lighting is "Daylight Continued"



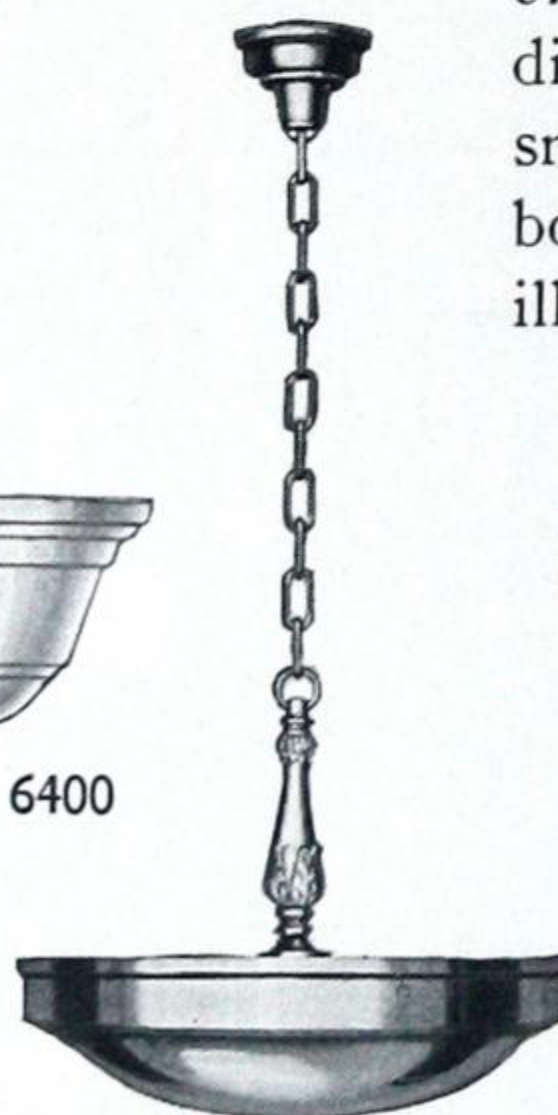
Design No. 5050



Design No. 6101



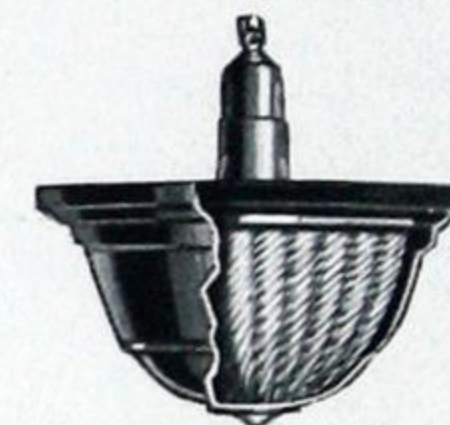
Design No. 6400



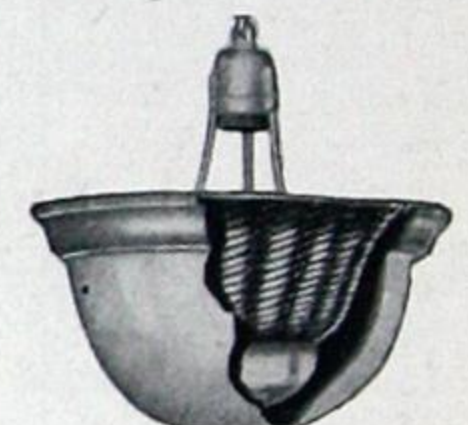
Design No. 5000



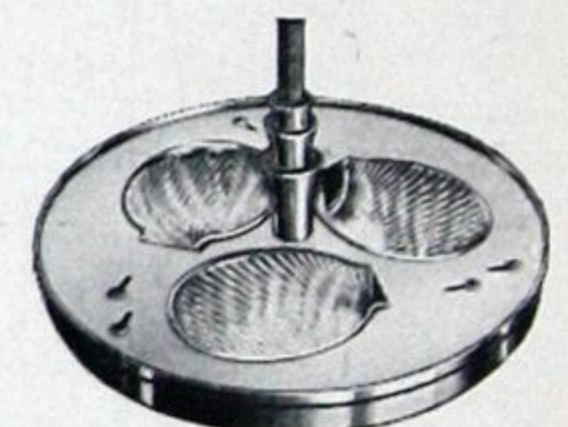
Design No. 9015-X



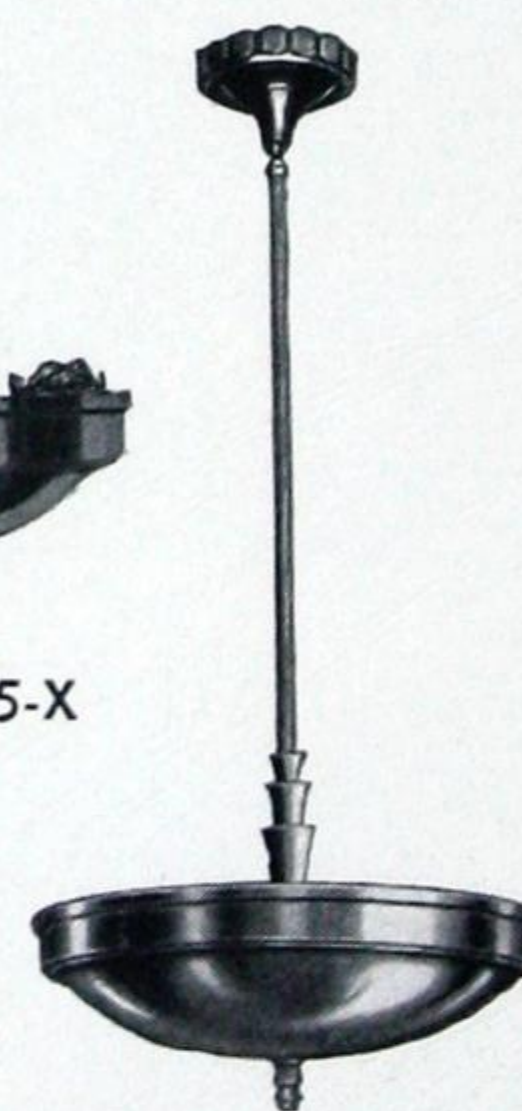
Nos. 5050, 6101, 6040



Nos. 5701, 4001



Nos. 5000, 9015-X, 7000



Design No. 7000



Design No. 5701



Design No. 4001

General Data

Quality of material, construction and finish are standard in all Curtis Luminaires. Metal is heavy gauge; the entire fixture is substantially but simply made with features that reduce installation cost and assure approval under the most rigid inspection.

Suspension

Standard designs shown are regularly supplied with hanger illustrated.

If desired, Luminaires can be equipped with rod hanger. All rod hangers have swivel top-link.

Finishes

Curtis Luminaires are known for quality and durability of finish.

Silver Grey—Used on No. 5050 is a sprayed lacquer-enamel in keeping with the modern lines of this design.

Washable Ivorytone—Used on Nos. 6101 and 6400 is also sprayed lacquer-enamel and blends with the color of ceilings and walls.

Satin Silvertone—Used on Nos. 7000, 5701 and 4001 is plated cadmium, brushed to a silver lustre.

Antique Silvertone—On Nos. 5000 and 9015 is a brush nickel, shaded to emphasize the character of this design.

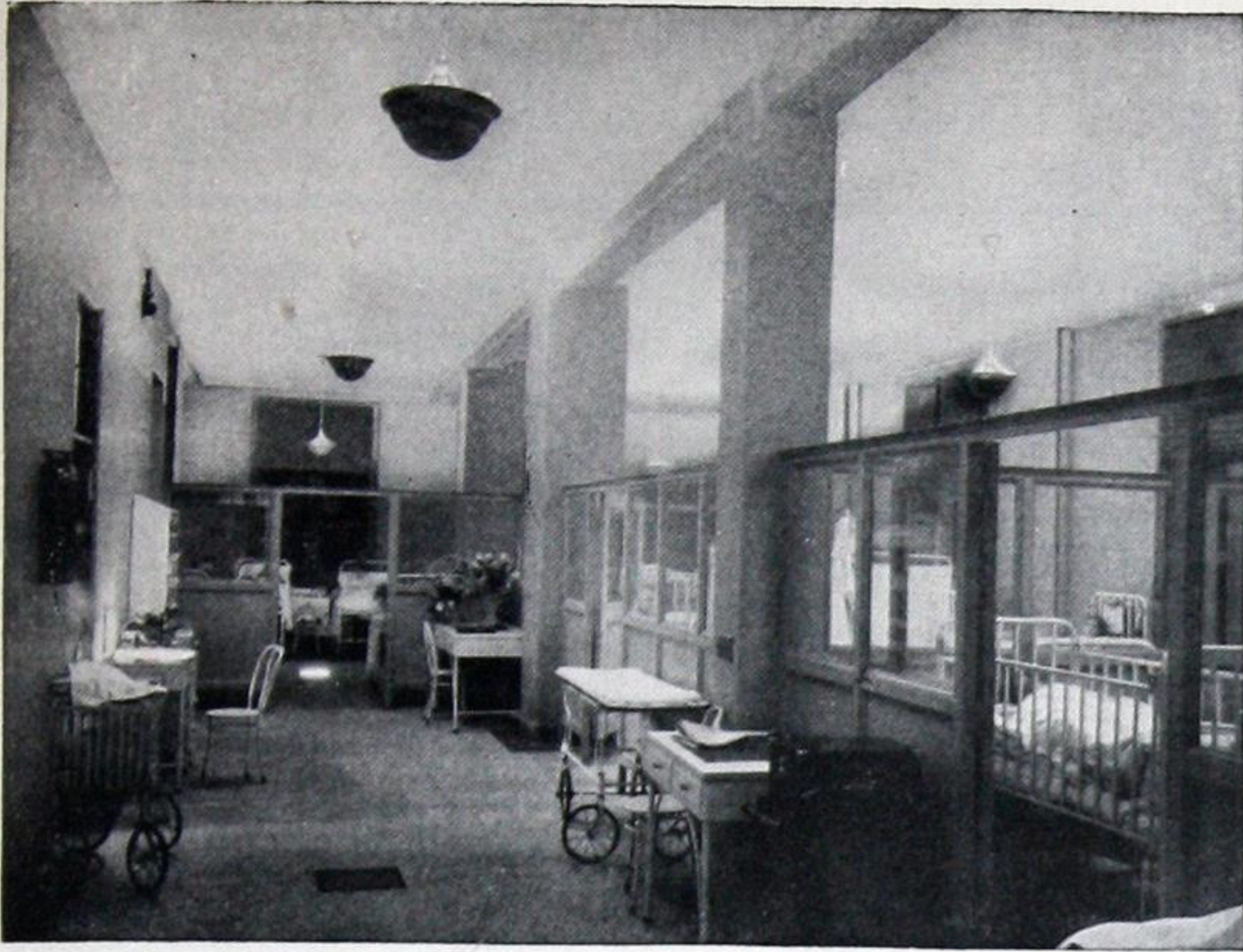
Cat. No.	Code Name	Lamp, watts	Bowl dimen.		Suspension	Finish	Metal
			Diam.	Depth			
5050	Gem	500 or 300	13 1/2"	6 3/4"	36"	Silver Grey	Steel
6040	Jewel	1500, 1000 or 750	18"	9"	48"	Silver Grey	Steel
6101-W	Garnet	200	14"	6 5/8"	36"	Washable Ivorytone	Steel
6101-M	Topaz	500 or 300	14"	6 5/8"	36"	Washable Ivorytone	Steel
6400	Ruby	500 or 300	16 1/4"	8"	36"	Washable Ivorytone	Steel
6800	Emerald	1500, 1000 or 750	20 1/2"	10"	48"	Washable Ivorytone	Steel
5000	Sapphire	(2) 150 or 100	15 1/2"	4 1/8"	36"	Antique Silvertone	Brass
5003	Pearl	(3) 150 or 100	15 1/2"	4 1/8"	36"	Antique Silvertone	Brass
6000	Coral	(3) 200	19"	5 3/8"	40"	Antique Silvertone	Brass
9015-X	Amarine	(2) 150 or 100	15 1/2"	4 1/8"	36"	Antique Silvertone	Brass
9015-XS	Yuklas	(3) 150 or 100	15 1/2"	4 1/8"	36"	Antique Silvertone	Brass
70039-P	Sardonyx	(3) 200	19"	5 3/8"	40"	Antique Silvertone	Brass
7000	Agate	(3) 150 or 100	15 1/2"	4 1/8"	36"	Satin Silvertone	Brass
5701-W	Turquoise	200	14"	7 5/8"	36"	Satin Silvertone	Steel
5711-M	Onyx	500 or 300	16"	8 3/4"	36"	Satin Silvertone	Steel
4001	Winall	200	12"	13 1/2"	36"	Satin Silvertone	Steel
4011	Allwin	500 or 300	16"	17"	36"	Satin Silvertone	Steel

All Curtis Luminaires are packed in cartons with No. 14 wire for quick delivery from local stocks.

FOR QUICK DELIVERY FROM LOCAL STOCKS!

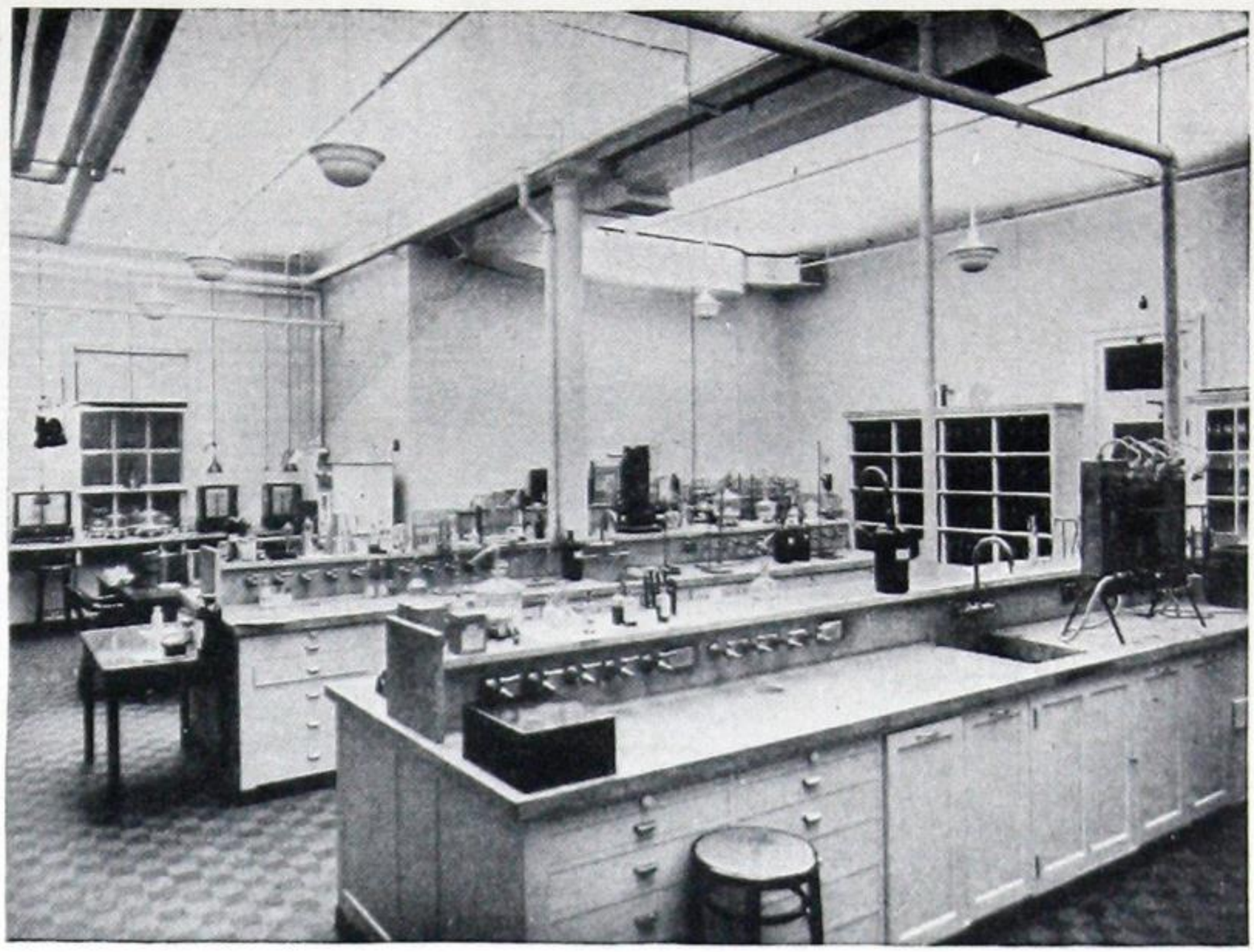
Capacity at Outlets

It is advisable to provide wiring that will carry sufficient capacity for possible future increases in the lighting. The cost is small compared to cost of alterations later. (See pages 15 and 16.)



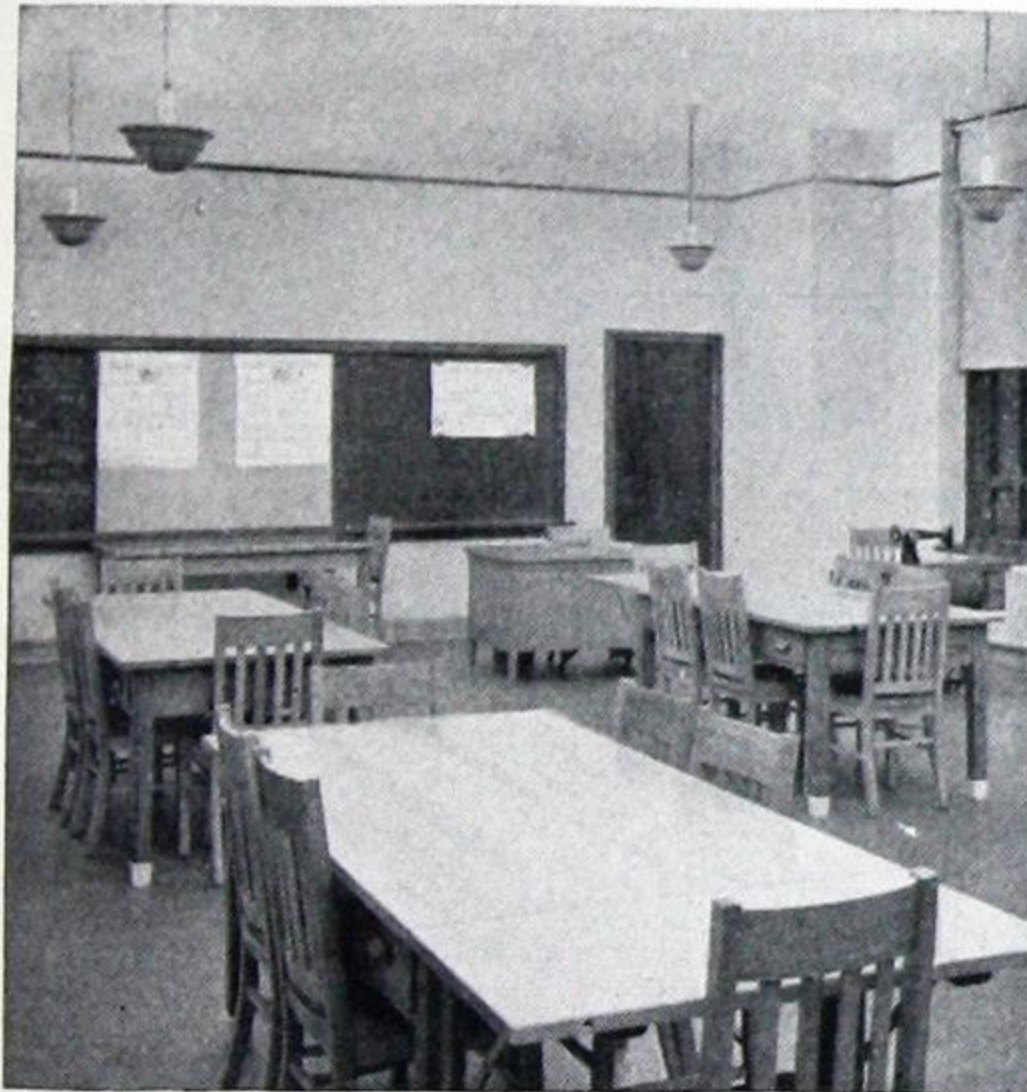
Ward in James Whitcomb Riley Hospital, Indianapolis, Ind.

ROBERT FROST DAGGETT, Architect
"Eye Comfort" indirect lighting has no glare and therefore obviates nervous restlessness and aids in convalescence.



Warner & Company Chemical Laboratories, New York, N. Y.

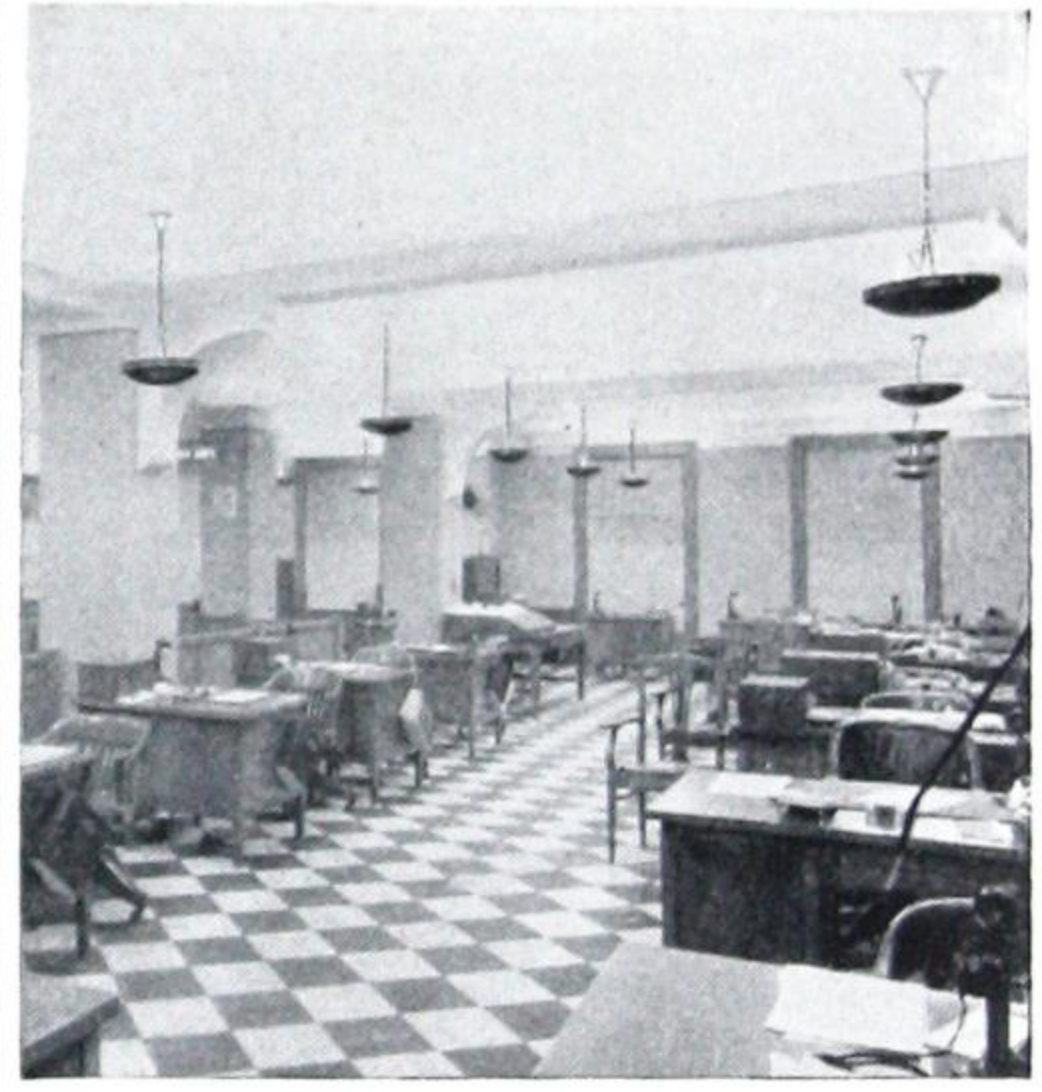
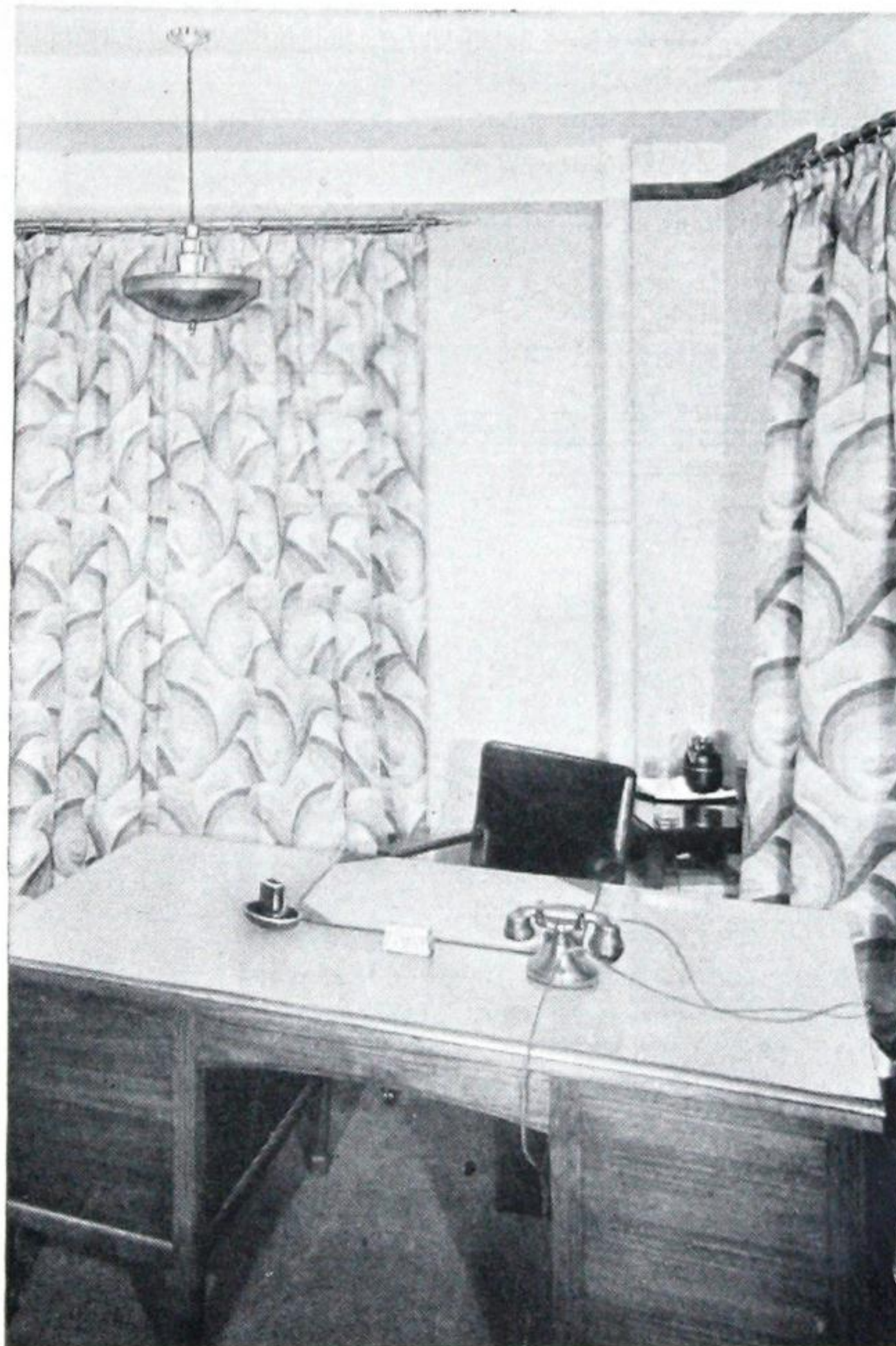
In rooms and work of this character good lighting is most vital. Well diffused indirect lighting reduces the chance of mistakes to a minimum.



Above:

Sewing Room, Trott School, Niagara Falls, N. Y.

KIRKPATRICK & CANNON, Architects
Good lighting is essential in all school rooms. Improper and inadequate lighting causes "optiphosis" (defects in vision caused by poor lighting), that may be permanent.



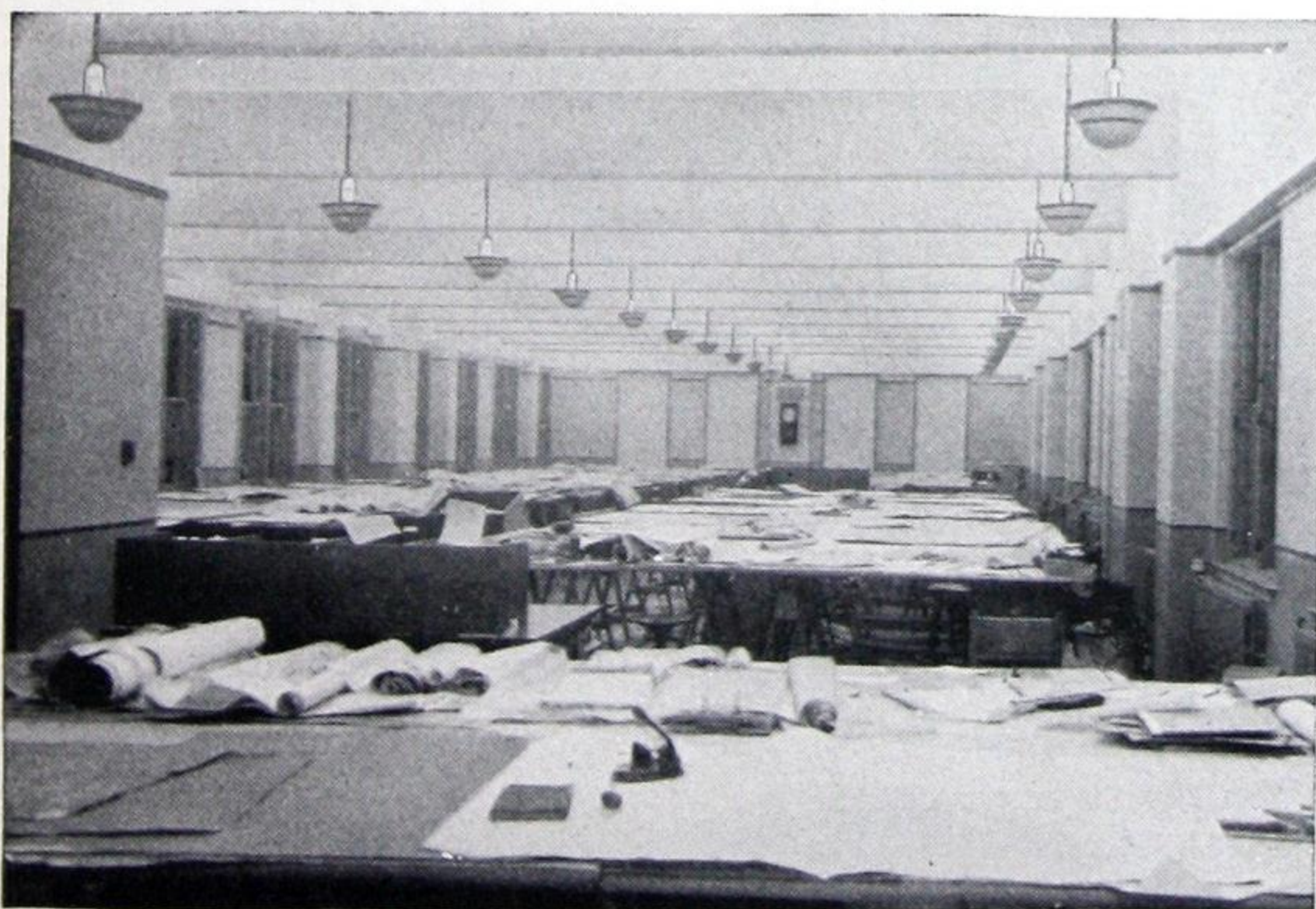
Above:

Cassett & Co. Office, Philadelphia

Indirect Lighting creates an impression of stability, speeds up work, reduces fatigue.

At Left:

Office
The Electric Association, Chicago
GRAHAM, ANDERSON, PROBST & WHITE, Architects.



Dominion Bridge Company, Montreal, Canada

JOHN S. ARCHIBALD, Architect

In the drafting room both the eye and the lighting system are given the most crucial test. "Eye Comfort" conserves vision and speeds up work. A typical example of good lighting practice.



General Office, Union Central Life Insurance Co., Cincinnati, Ohio

GARBER & WOODWARD, Architects

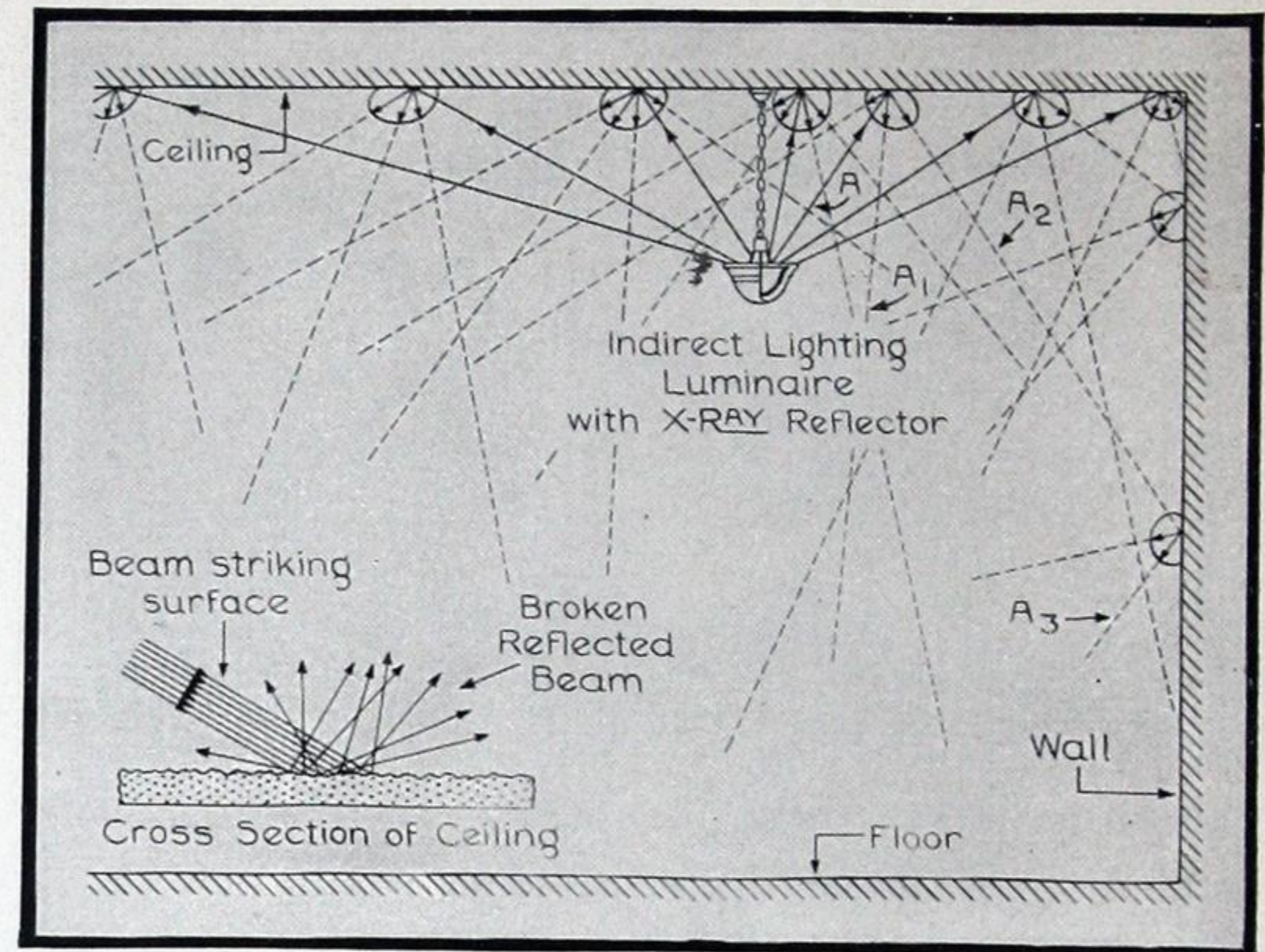
No. 4001 "Winall," designed especially for use throughout this building. Good lighting reduces fatigue and helps keep employees accurate.

PLANNING THE LIGHTING SYSTEM

Brief suggestions for planning lighting from Panels, Coves, Skylights, Pedestals, Urns or Brackets have been made on the pages devoted to these methods. The suggestions on Page 16 are primarily for lighting with pendant ceiling luminaires. The table below gives suggestions of present standards of illumination for various interiors lighted by any one of these methods.

Curtis "Eye Comfort" Indirect Lighting Luminaires are equipped with one or more X-Ray Silver Mirrored Reflectors. These reflectors, the most efficient made, are scientifically designed to direct the light uniformly to the ceiling. From there it is redistributed throughout the room, assuring smooth, even illumination, free from glare.

Good practice in lighting today calls for higher intensities than have been used in recent years. This makes it particularly desirable to provide not only sufficient capacity in the wiring at the time the building is being constructed, but to make allowance for further increases of from 20 to 50%. The initial cost for providing extra capacity is not great.



This Diagram Shows the Principle of Indirect Lighting

The ceiling acts as a diffusing medium and breaks up each light beam into a series of rays, giving an illumination free from glare and strong shadows.

PRESENT STANDARDS OF ILLUMINATION FOR COMMERCIAL INTERIORS

	Foot-Candles Recommended		Foot-Candles Recommended
Armories:		Hotels (Cont'd):	
Drill sheds	10	Dining Room	6
Exhibition Halls	12	Bed Rooms	8
Art Galleries:		Writing Room	12
General	5	Library Reading Rooms	12
On Paintings	25-100	Lodge Rooms	6
Auditoriums	5	Moving Picture Theatre:	
Automobile Show Rooms	15	During Intermission	5
Bank Cages and Offices	15	Museum:	
Barber Shop	15	General	8
Base Ball—Indoor Game	15	Special Exhibits	25-100
Basket Ball	15	Office Buildings:	
Billiard Tables	25	Close Work	15
Bowling:		General Space—No Close Work	10
On Alley, Runway and Seats	8	File Room	6
On Pins	25	Post Office:	
Churches:		Lobby	10
Auditorium	3	Sorting, Mailing, etc.	15
Sunday School Room	8	Racquet	25
Pulpit or Rostrum	12	Railway:	
Art Glass Windows	25-50	Depot—Waiting Room	8
Club Rooms:		Ticket Offices	12
Lounge	5	Restaurants	8
Reading Room	12	Schools:	
Court Rooms	10	Auditorium	8
Dance Halls	6	Class Rooms, Library and Office	12
Dental Offices:		Drawing	25
Operating Office	12	Laboratories	12
Dental Chair	50	Manual Training	12
Drafting Room	25	Sewing Rooms	25
Gymnasiums:		Skating Rink (Indoor)	8
Main Exercising Floor	12	Squash	25
Swimming Pool	8	Stores—Department and Large Specialty:	
Handball	25	Main Floors	15
Hospitals:		Other Floors	12
Lobby and Reception Room	6	Basement Store	15
Wards (with local illumination)	5	Stores—Medium Size	12-15
Private Rooms	8	Telephone Exchanges:	
Operating Table	100-200	Operating Rooms	8
Operating Room	15	Terminal Rooms	12
Laboratories	15	Tennis (Indoor)	25-50
Hotels:		Theatres:	
Lobby	8	Auditorium	3
		Lobby	12

Method of Planning

The foundation of every lighting system is the wiring plan. Outlets should be placed to provide for future as well as immediate needs. Capacities should be ample for flexibility. While structural features often determine location and spacing of outlets, the following suggests a simple method of planning lighting with "Eye Comfort" Indirect Lighting Luminaires:

Determine from table on Page 15 the foot-candle intensity suggested for your type of interior.

The first column of the table below shows average area per outlet in square feet adequately illuminated under various ceiling heights. These areas are average.

Follow *your* area (or that which comes nearest to it) to the column at the right, corresponding with the foot-candle intensity you require. Here you have the wattage capacity for each outlet.

Example: Typical office below. In the table on Page 15, 10-foot candles are recommended. Spacing between outlets in each bay is 15 ft.; giving approximate area, 225 sq. ft. Ceiling height, 12 ft. In the table below "column 10 to 15-foot candles" indicates that 500 watts per outlet should be used. Try this yourself!

Several types of indirect luminaires are suggested on Pages 11 to 14, inclusive.

TABLE TO QUICKLY DETERMINE WATTAGE PER OUTLET

Average area per outlet	Ceiling height	Watts per outlet to produce		
		6-10 ft. Candles	10-15 ft. Candles	15-25 ft. Candles
81	9.0'		200	300
100	9.5 to 11.0'	200	300	500
121		200	300	500
144		200	300	500
169	11.5 to 15.0'	300	500	750
196		300	500	750
225		300	500	750
256	16.0'	500	750	1000

Light Transmission Through Glass

The amount of light transmitted through glass panels used in skylights, wall panels, etc., varies with the type of glass, as indicated in the table at top of next column.

LIGHT TRANSMISSION THROUGH GLASS

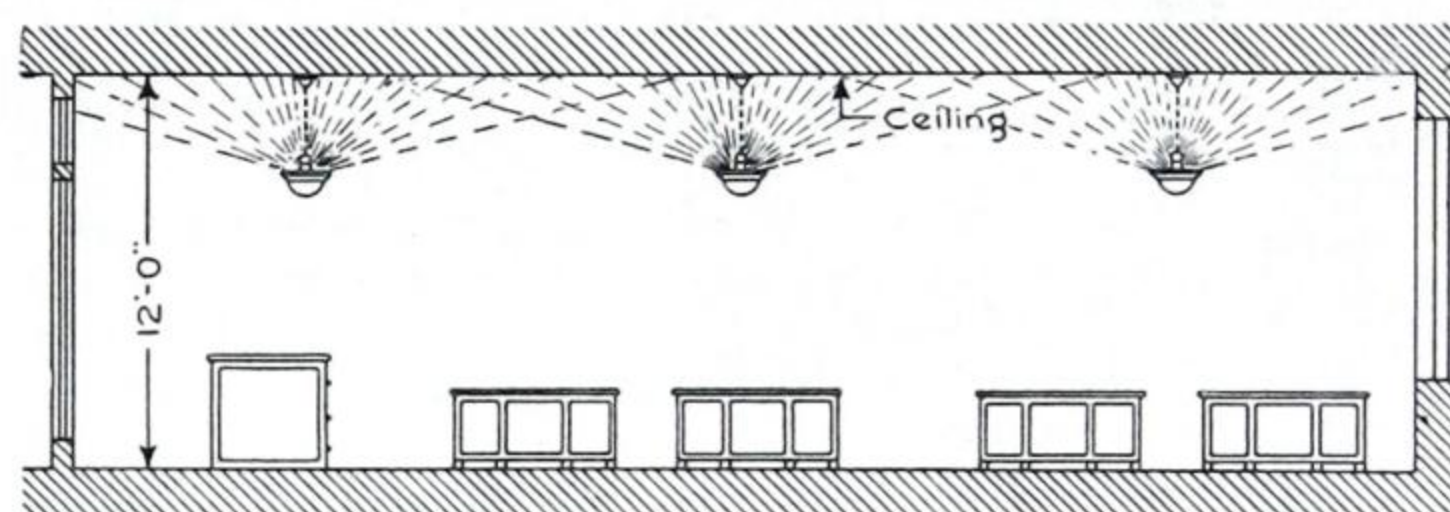
Glass	Transmission Factors	Glass	Transmission Factors
Clear Hammered	90-95%	Clear Antique	85-90%
Clear Sanded Hammered	70-85%	Amber Antique	75-80%
Clear Pebbled	65-80%	Sanded Amber Antique	55-70%
Amber Hammered	70-75%	White Opal	35-50%
Sanded Amber Hammered	50-60%	Flashed Opal	55-60%

Reflection Factor of Paint Finishes

The colors of walls and ceilings have a direct bearing upon the efficiency of the lighting system, as is shown in the following table: (Ivory, White or Cream are recommended for ceilings).

Color	Reflection Factors	Color	Reflection Factors
Flat White	82%	Light Gray	60%
Ivory-White	78%	Light Green	55%
Cream	74%	Buff	55%
Caen Stone	70%	Tan	40%
Ivory Tan	65%	French Gray	35%

Acoustical Materials must be studied individually to determine reflection factor. Results of many tests available on request.



Uniform Lighting Is Assured by Uniform Spacing of Fixtures

Installing Fixtures at Various Ceiling Heights

The architect or engineer need not necessarily concern himself with suspension data unless ceiling heights are very low.

Where suggested, suspension of luminaires might be valuable, table at the right is available for reference.

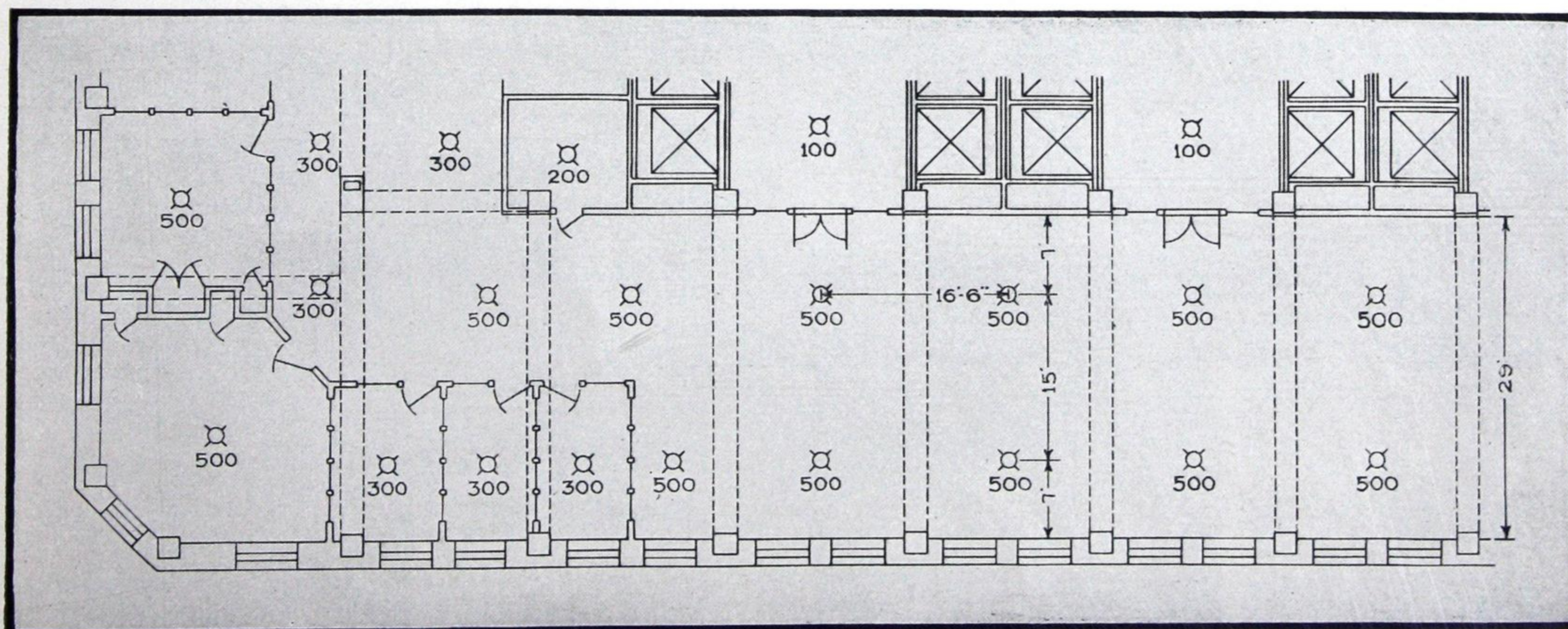
Luminaires with chain hanger suspension can be adjusted while luminaires are being hung.

Luminaires with rod hangers, however, should have suspension figured accurately to secure effect of proper proportion and satisfactory lighting.

SUSPENSION DATA

Ceiling height	Average spacing between outlets	Suspension top of bowl to ceiling
9.0'	9'	24"
9.5'	10'	26"
10.0'	11'	28"
10.5'	12'	30"
11.0'	12'	32"
11.5'	13'	34"
12.0'	13'	36"
13.0'	13'	36"
14.0'	14'	36"
15.0'	15'	42"
16.0'	16'	42"

Color of Ceiling Should Be Similar to or Lighter Than the Color of a Government Postal Card

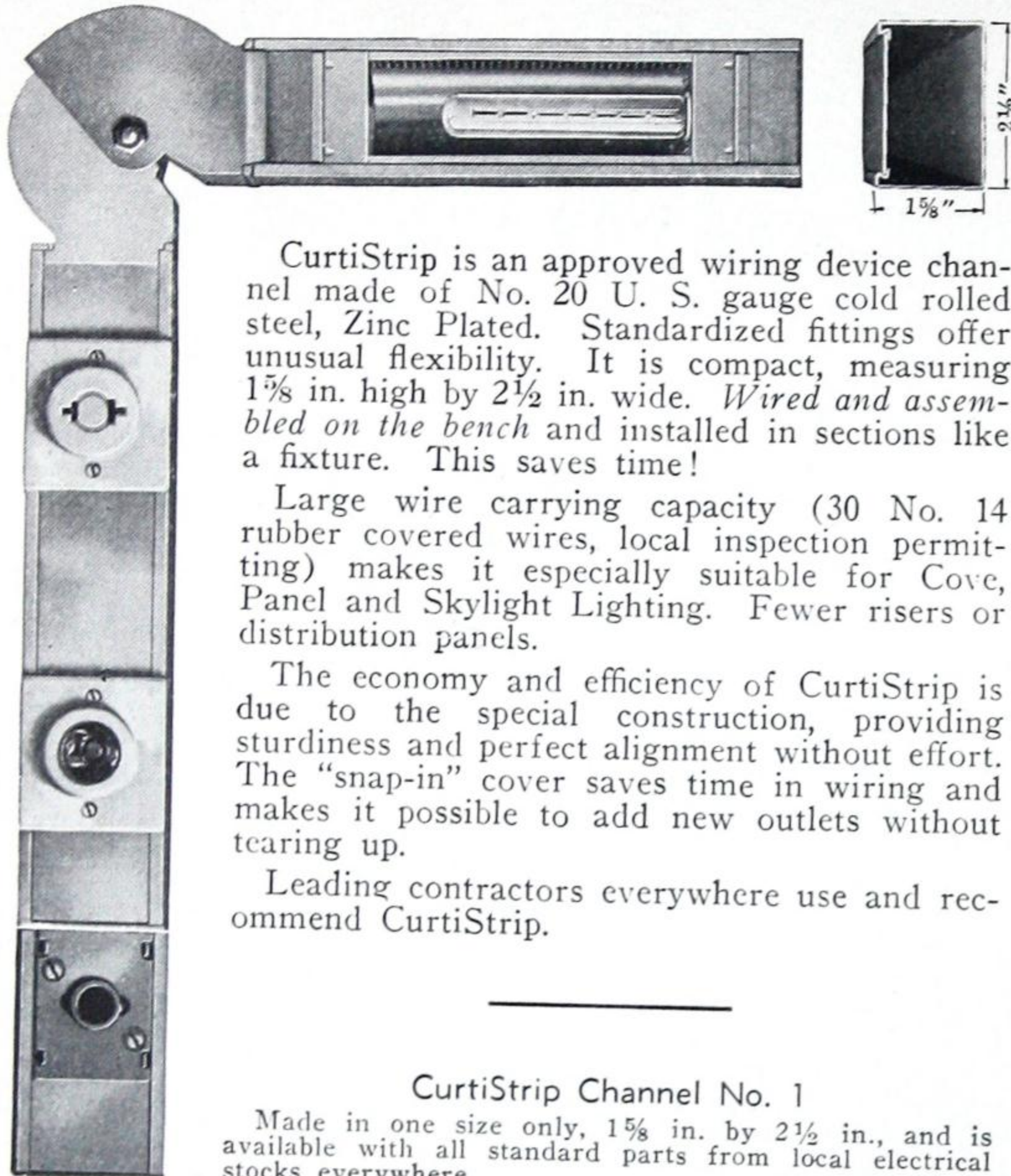
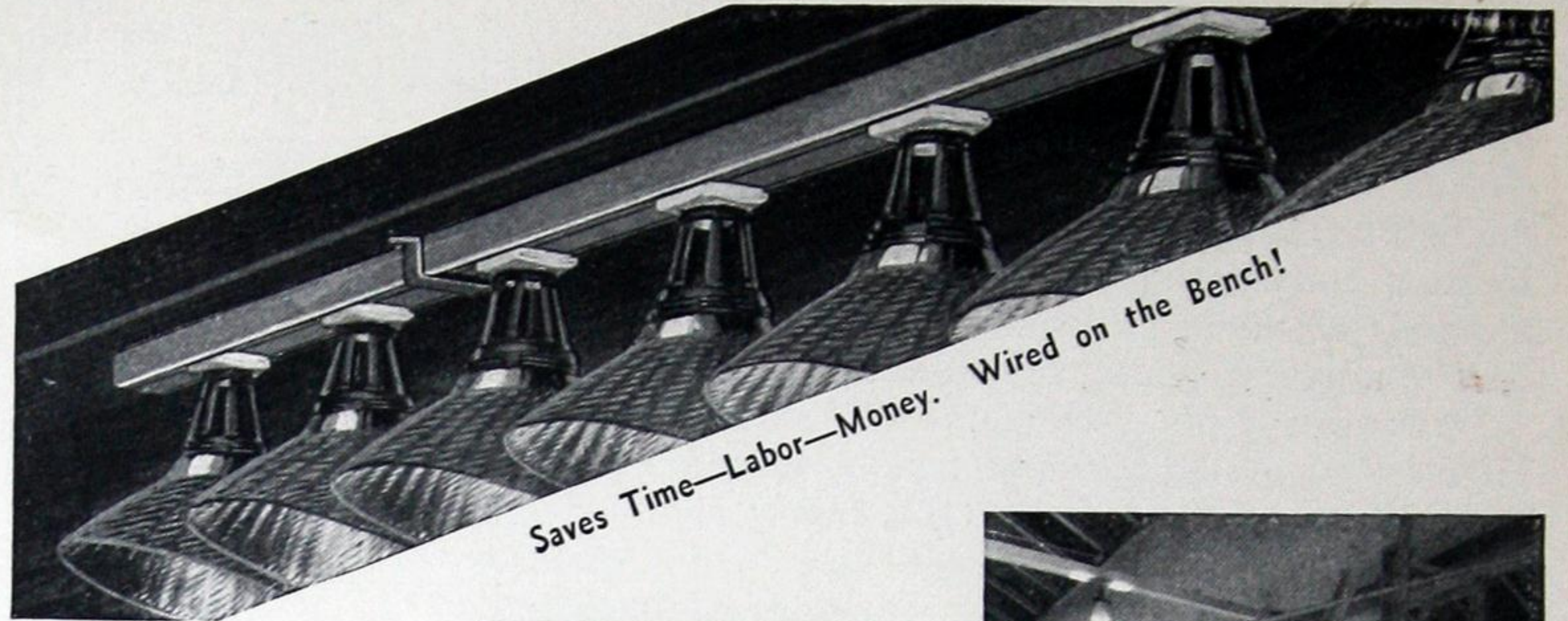


Plan of a Typical General Office, Showing Location and Wattage of Outlets, also Arrangement for Lighting Where Smaller Private Offices Are Provided

CurtiStrip

A Simplified Wiring Device

Listed as Standard by
Underwriters' Laboratories



CurtiStrip is an approved wiring device channel made of No. 20 U. S. gauge cold rolled steel, Zinc Plated. Standardized fittings offer unusual flexibility. It is compact, measuring 1 5/8 in. high by 2 1/2 in. wide. *Wired and assembled on the bench* and installed in sections like a fixture. This saves time!

Large wire carrying capacity (30 No. 14 rubber covered wires, local inspection permitting) makes it especially suitable for Cove, Panel and Skylight Lighting. Fewer risers or distribution panels.

The economy and efficiency of CurtiStrip is due to the special construction, providing sturdiness and perfect alignment without effort. The "snap-in" cover saves time in wiring and makes it possible to add new outlets without tearing up.

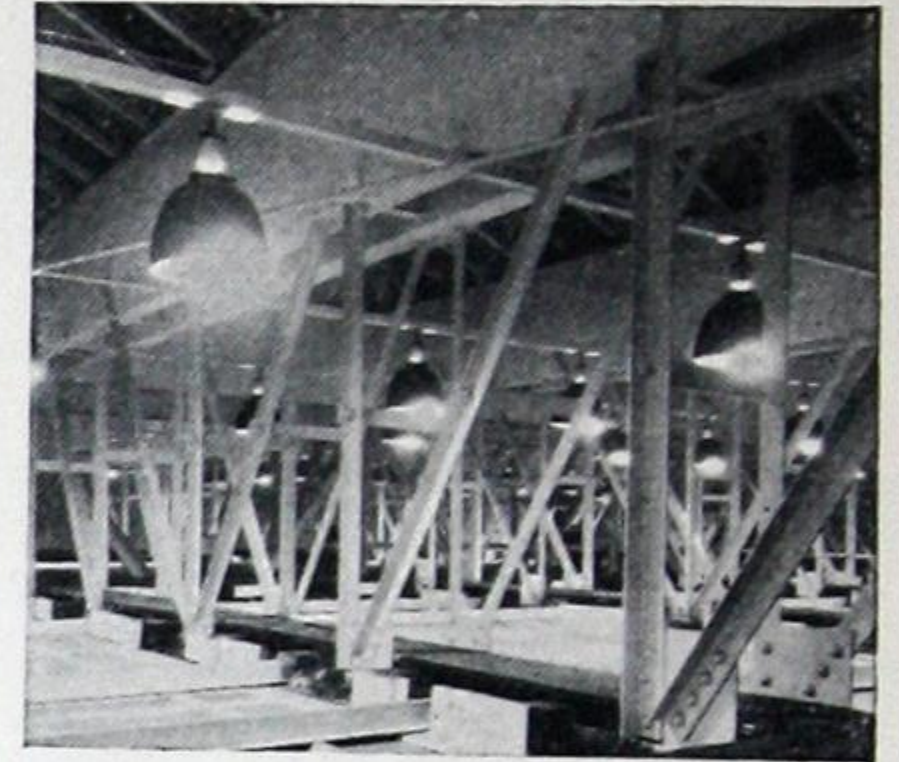
Leading contractors everywhere use and recommend CurtiStrip.

CurtiStrip Channel No. 1

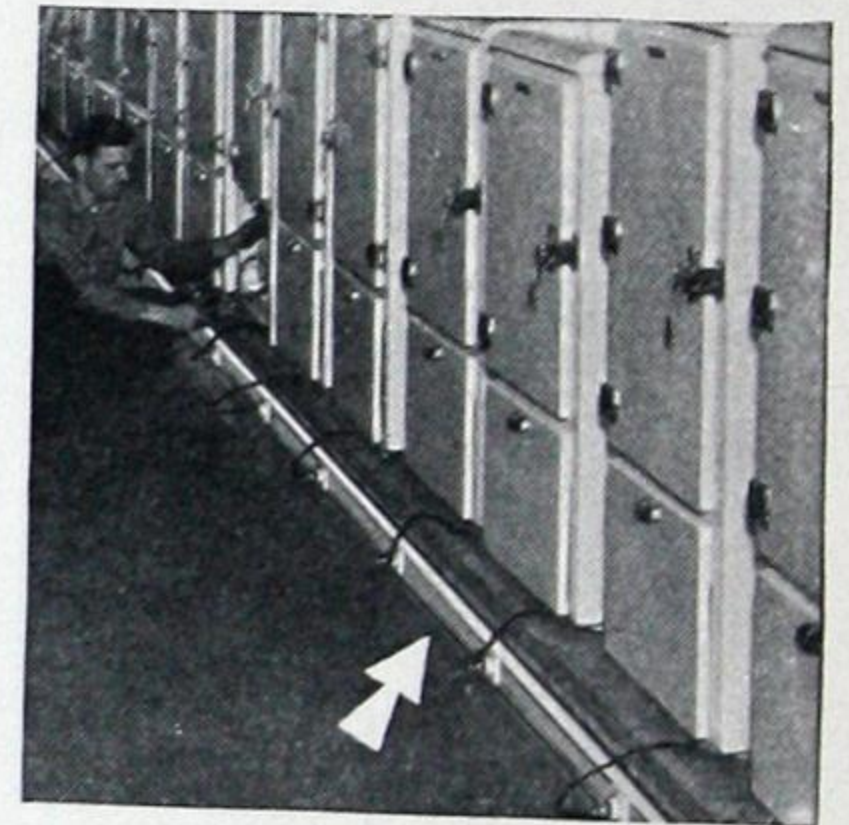
Made in one size only, 1 5/8 in. by 2 1/2 in., and is available with all standard parts from local electrical stocks everywhere.



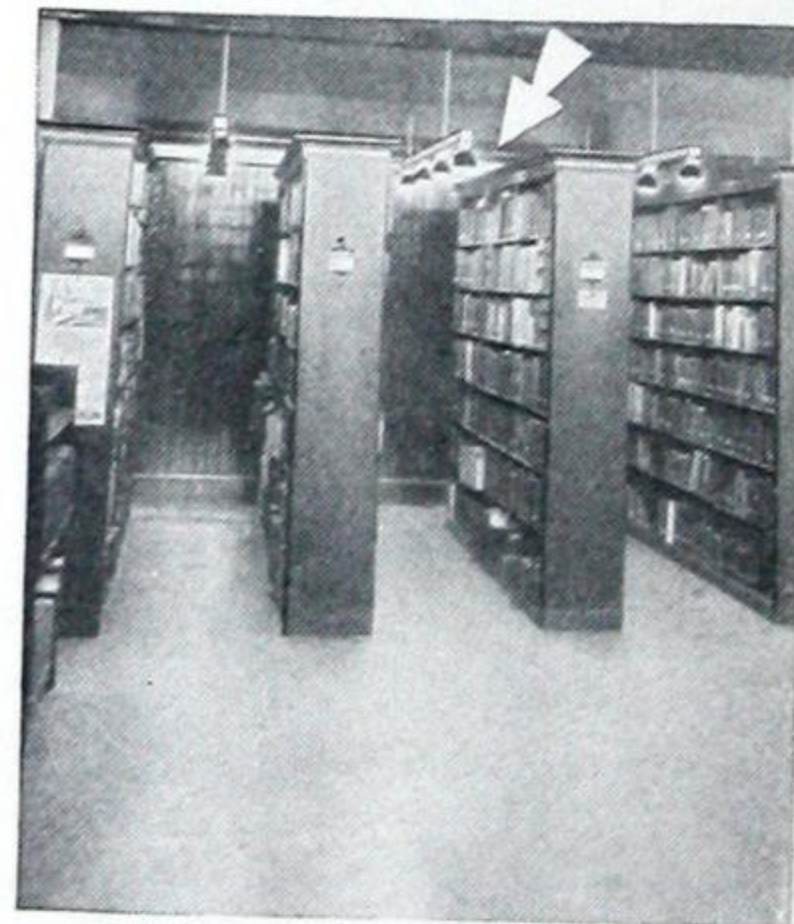
Use CurtiStrip and X-Ray Reflectors for all show window lighting.



The sturdiness of CurtiStrip is demonstrated by these large size industrial reflectors suspended above skylight.



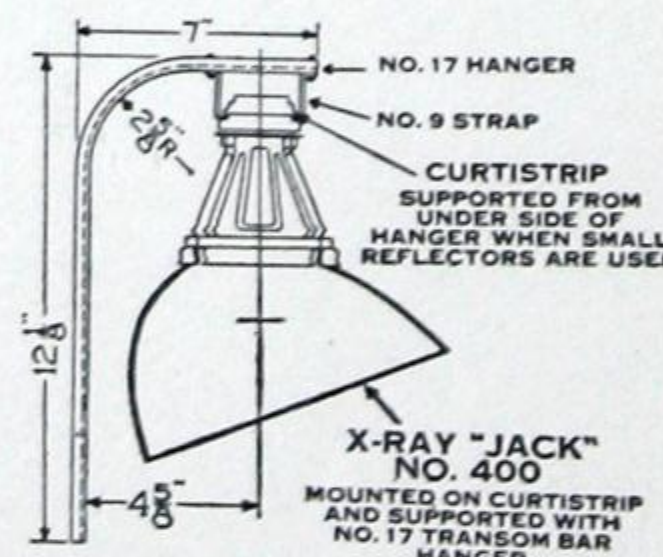
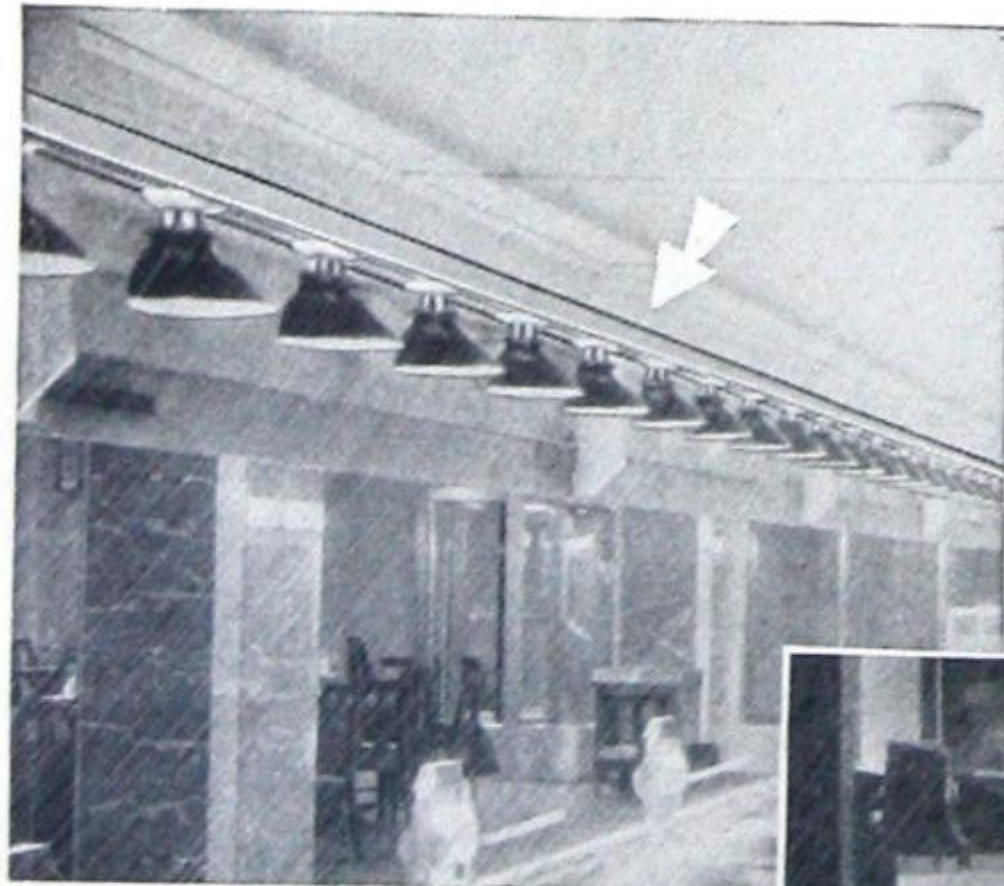
CurtiStrip and No. 4-15-ampere "Plug-In" receptacles provide convenience outlets for testing electrical equipment of all kinds.



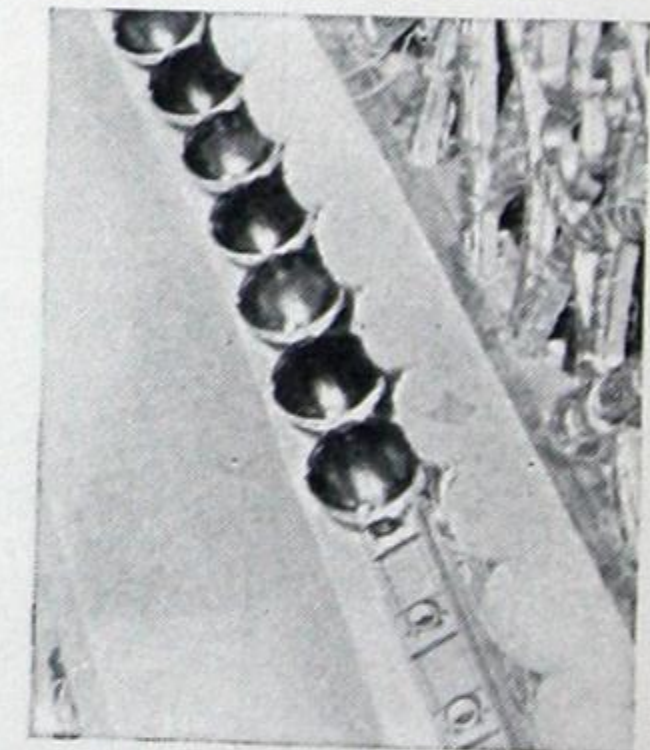
X-Ray No. 3 Reflectors with 50-watt lamps mounted on CurtiStrip supported from ceiling with No. 24 Bracket Assembly. Effective for book stacks, stock shelves, etc.

Left:

Notice the perfect alignment of CurtiStrip and No. 11 X-Ray Reflectors (using 60-watt lamps), above the cafeteria counter at the left. CurtiStrip is especially practical where numerous outlets are required.



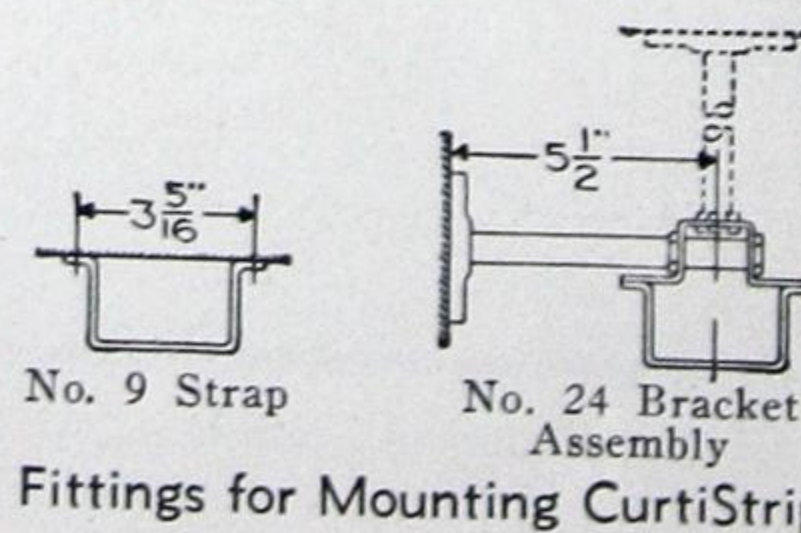
Typical method of installing Window Reflectors on No. 17 hanger.



Cove lighting done quicker and better with CurtiStrip. Numerous outlets, wired on the bench—placed in cove like a fixture—large wire capacity, permitting feeders to be brought up at one point—the outstanding features.

Right:

Outlets for power machinery in offices, shops, etc., are easily and quickly provided with CurtiStrip and No. 4 dead front 15-ampere "Plug-In" receptacle. This provides an inexpensive method of extending outlets in an approved manner. Additional No. 4's can be added by simply removing the "snap-in" cover—no need to completely rewire.



Fittings for Mounting CurtiStrip



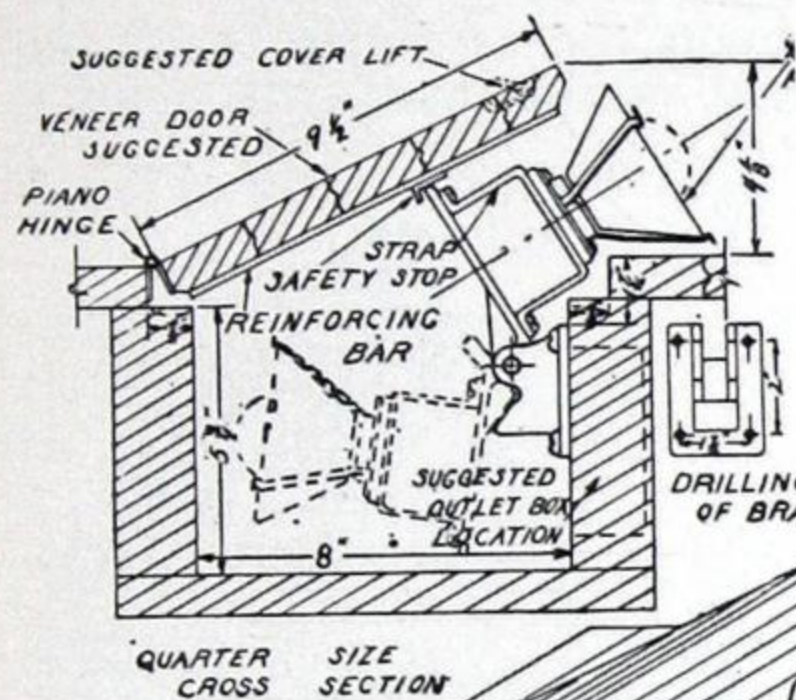
Typical X-Ray cove lighting unit mounted on CurtiStrip.

Close spacing of outlets, straight alignment without effort, ease in wiring and assembling, make CurtiStrip particularly adapted for marquee lighting.

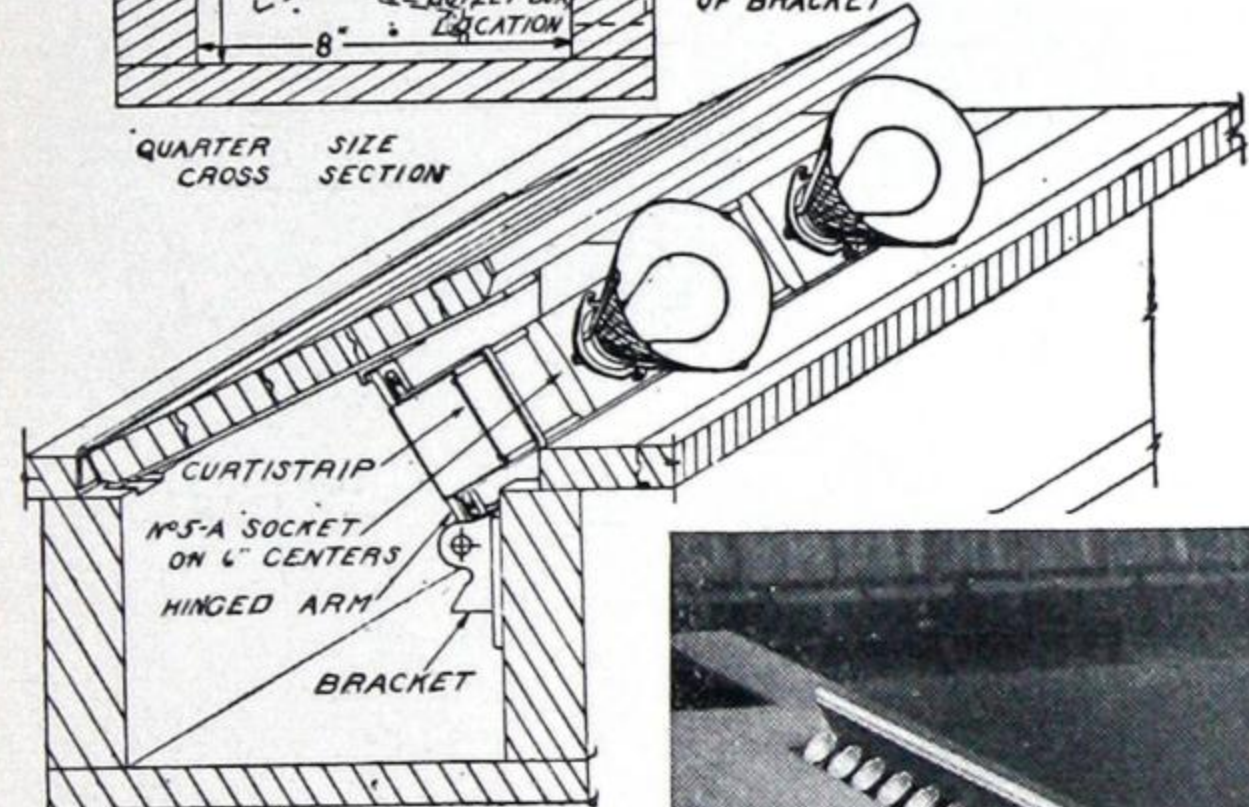


Disappearing Footlights

Disappearing footlights, using CurtiStrip and X-Ray Reflectors, are recommended for schools, clubs, lodges, etc.

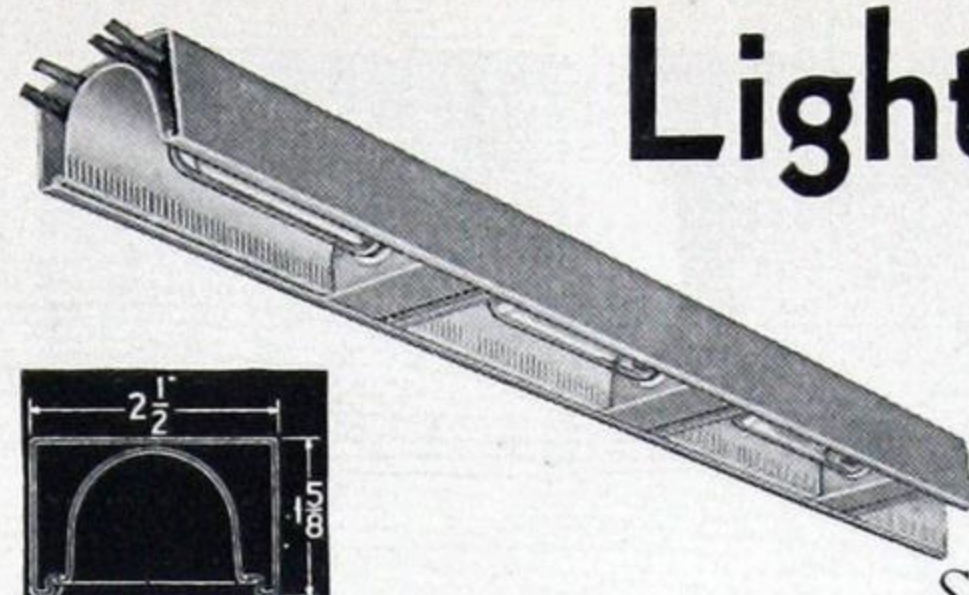
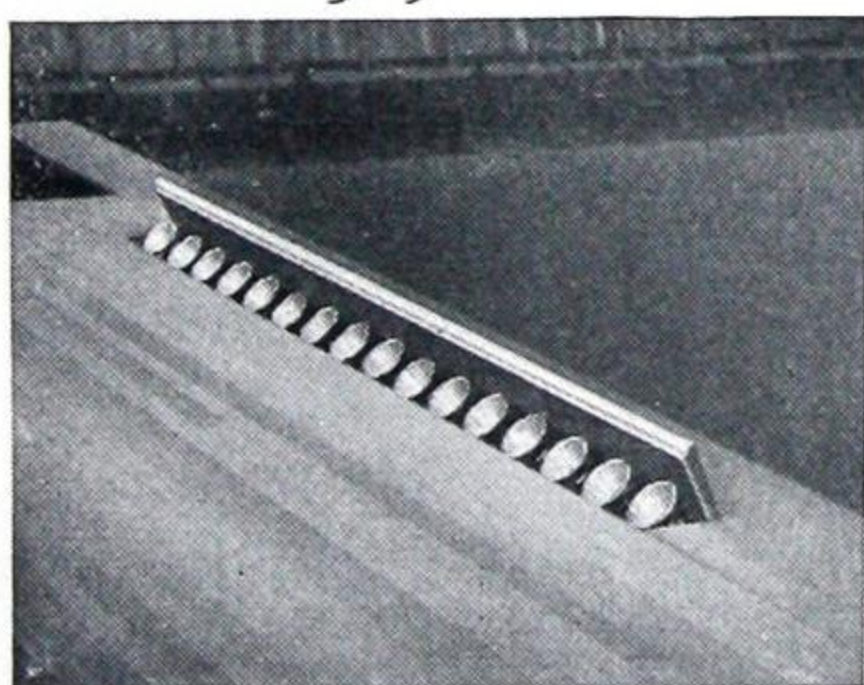


Catalog No. 10312 includes CurtiStrip, X-Ray E-15½ Reflector for 25 or 50-watt A-19 or 40-watt A-21 lamp on 6-inch centers. Fittings (reinforcing bar, safety stop, hinged arms and brackets) are included for mounting and hinging footlights. Piano hinge and door are not included.



Minimum Space—

Width 8 inches, depth 5¾ inches to underside of door. Specify length of No. 10312 required



LightStrip

A Standardized Lighting Channel

Small, Neat, Economical

LightStrip is the only standardized lighting channel available from local stocks that may be made to any length. It is made with CurtiStrip and a reflector unit assembly, Catalog No. 26, for use with 25-watt intermediate base T-6½ lamp (1000 burning hours). This produces a wide spread of light, approximately 90°. Spacing from center to center can be made from 8 in. up to any spacing required. All CurtiStrip fittings and "Plug-In" Receptacles are standard for LightStrip. Its small, compact size, 1½ in. by 2½ in., affords many uses.

Panel Lighting—For even lighting on Flashed Opal Glass Panels: *Narrow panels*, distance from front of LightStrip to glass must not be less than panel width. *Wide panels*, spacing between each row of LightStrip must not exceed distance from front of LightStrip to glass. Where room illumination is required from panel lighting, refer to pages 3 and 4.

Uses for LightStrip

General—Panel Lighting, Bulletin Boards, Bookkeepers' or Information Desks, Ticket Offices, Exhibit and Wall Cases, Small Coves, Picture Lighting.

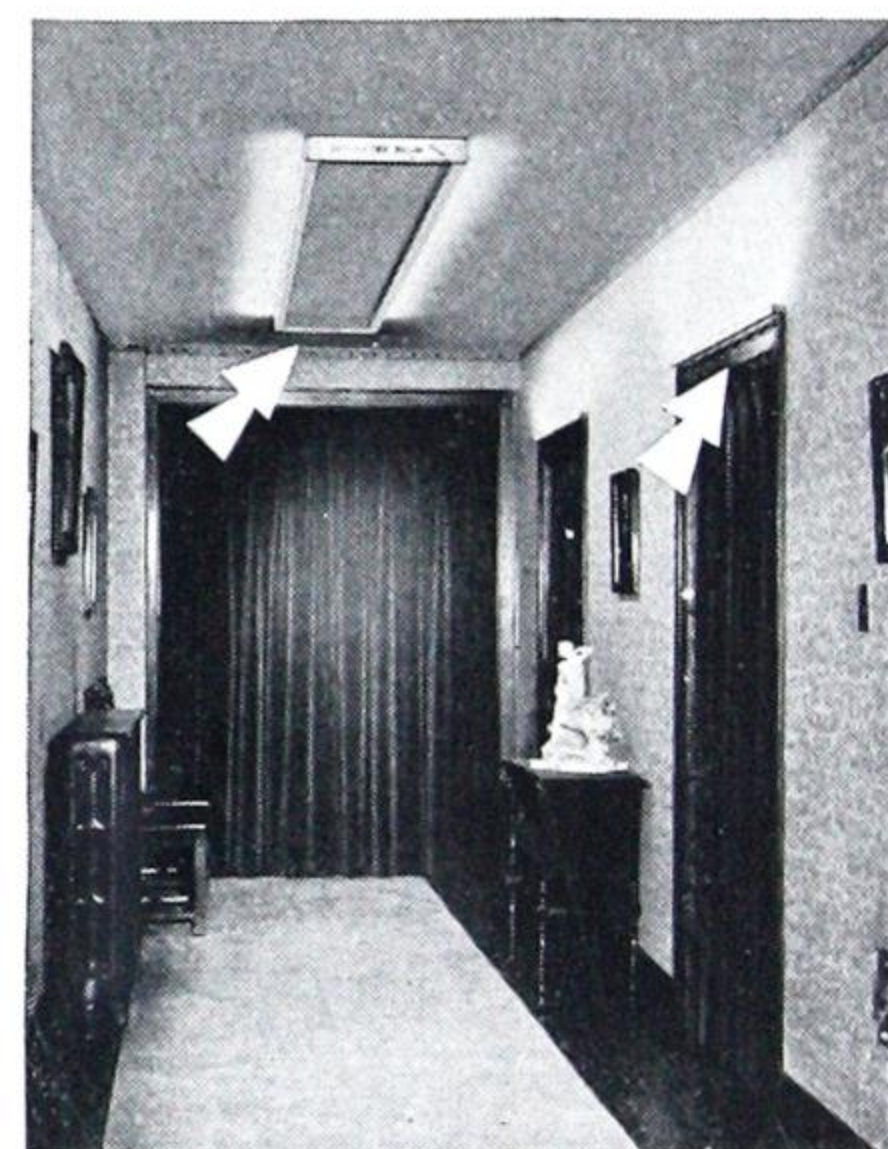
Churches—Small Altars, Sanctuaries, Baptistry, Cross Stations, Niches, Windows.

Banks, Offices and Industrials—Counters, Cages, Mail Rooms, Maps, Exhibits, Inspection and Sorting Tables.

Schools and Libraries—Book Racks, Laboratories, Reading and Inspection Tables, Blackboards.

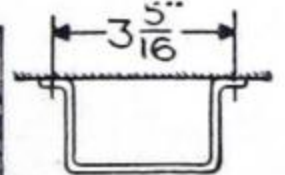
Stores and Shops—Food Shops, Markets, Cafeterias, Cases, Counters, Bargain Tables.

Theatres, Auditoriums and Public Buildings—Small Stages and Settings, Makeup Rooms, Art Galleries, Niches.

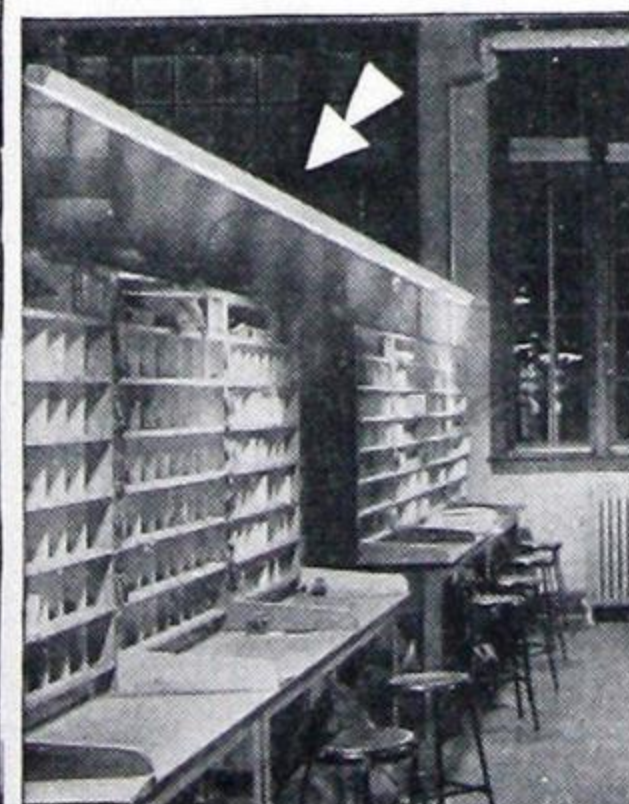


LightStrip is built into Moderne channel lighting fixtures, mounted on ceiling, as shown, or suspended from rods. Also for cove sections in narrow rooms, or above doorways, as indicated by arrow.

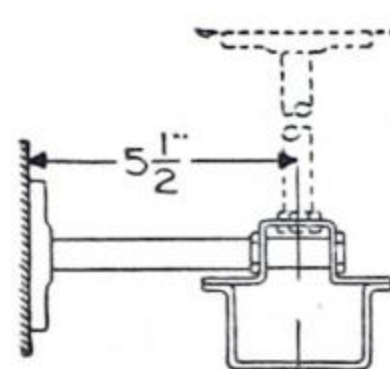
LightStrip Is Made with CurtiStrip



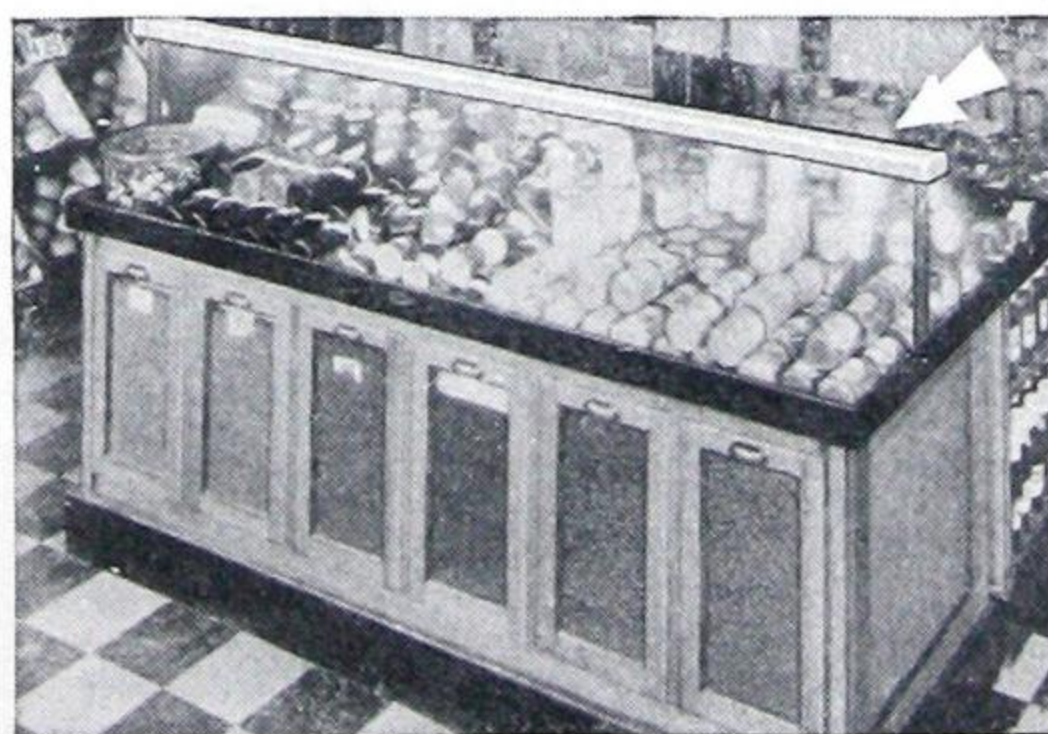
No. 9 Strap used for mounting LightStrip



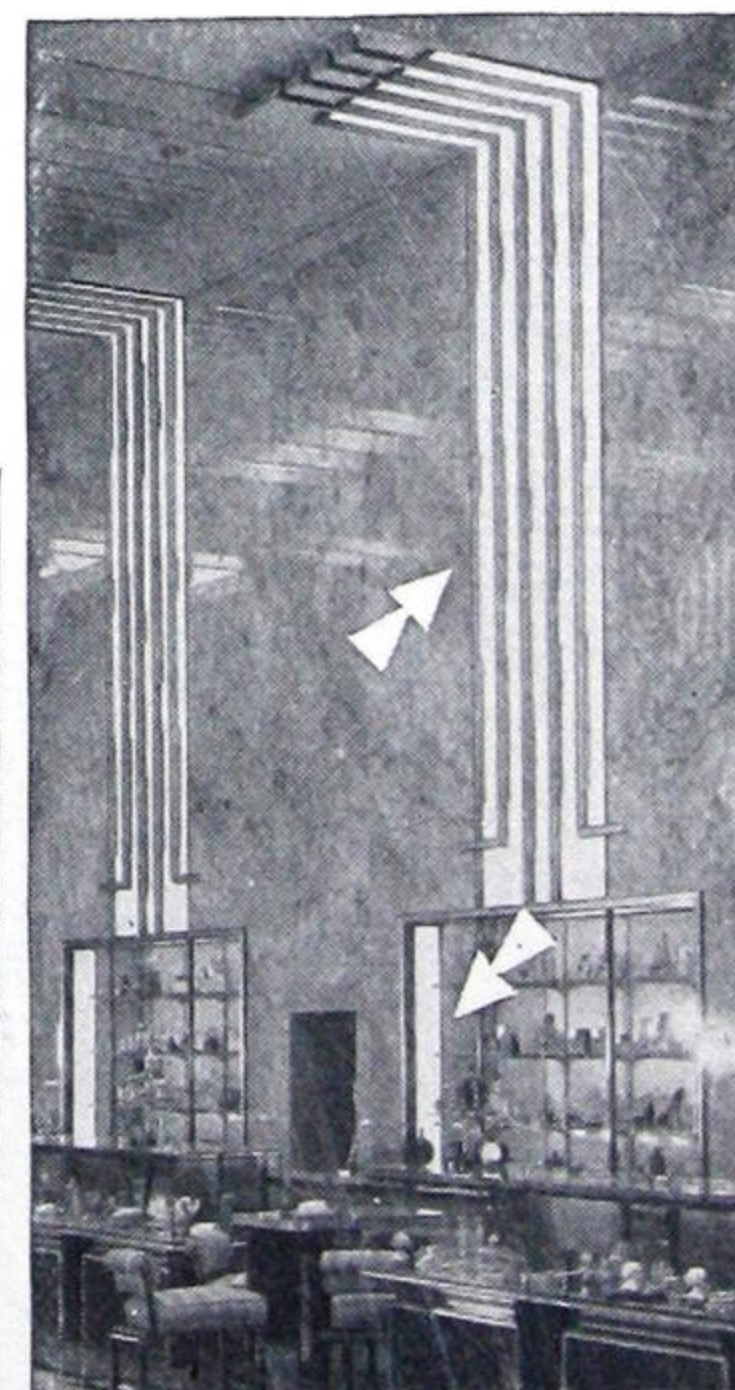
Sorting racks in Industrial Plants, Post Offices, Mail Rooms are efficiently lighted with LightStrip. Low installation cost and straight alignment without effort are important features.



LightStrip can be hung from wall or ceiling using No. 24 Bracket Assembly



LightStrip gives "sales value" to Counters and Bargain Tables. Card-clip (No. 27) is used to hold signs, price cards, etc. Signs made of regular stencil paper. Counters may also be lighted with LightStrip suspended from ceiling on rigid or chain hanger, or from side of counter or wall. No. 24 Bracket Assembly generally used.



LightStrip is adapted to panel lighting because of low cost and time saved in installing.

LightStrip offers an economical and attractively modern method of lighting side walls or stock shelves and wall cases in stores, shops, restaurants.

FLOODLIGHTING

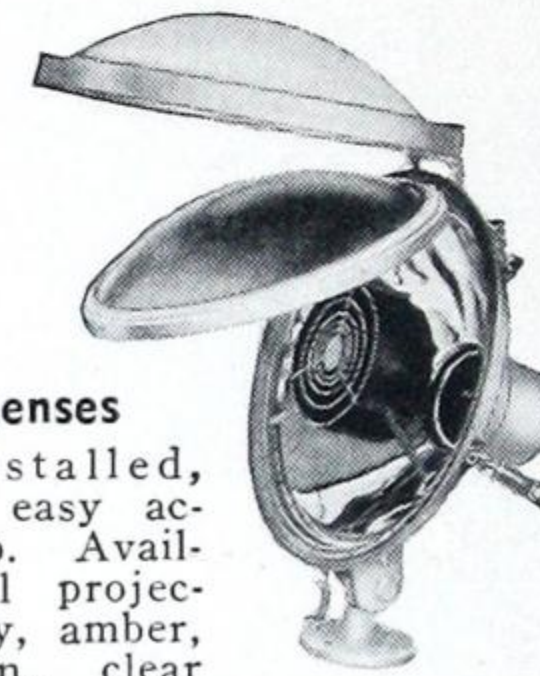
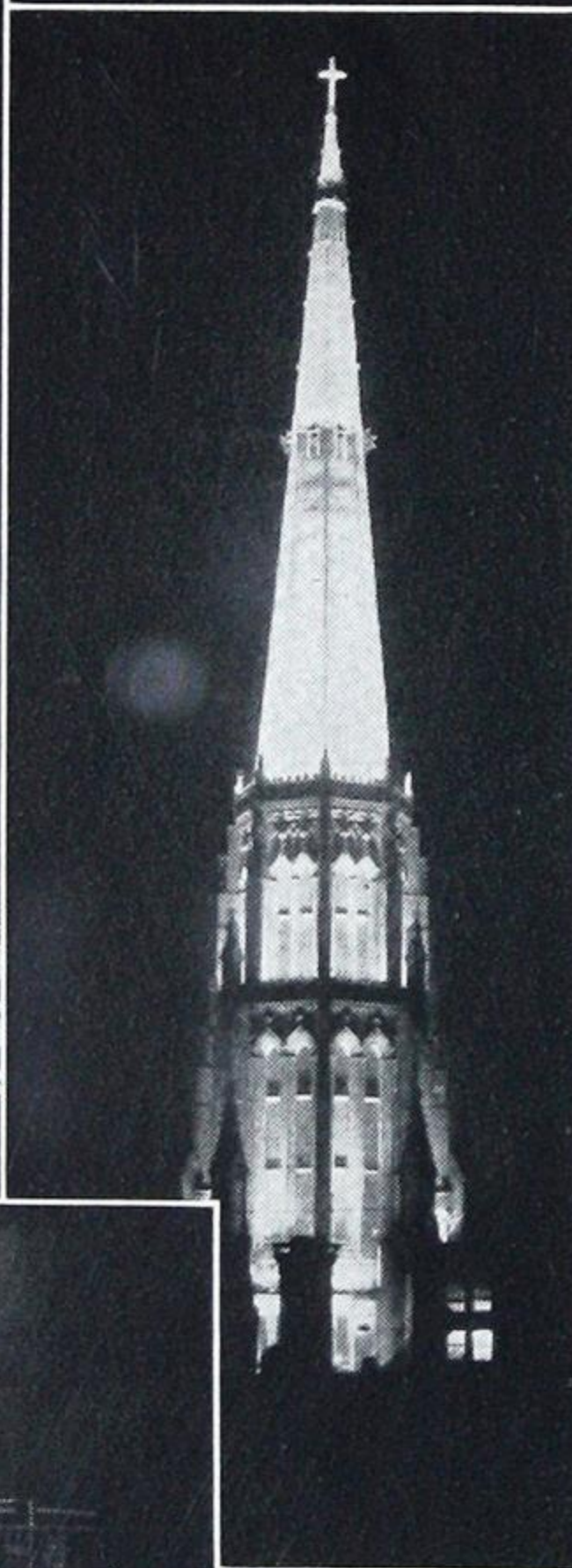
with

X-Ray
Projectors

The field of floodlighting may be divided into two general classifications:

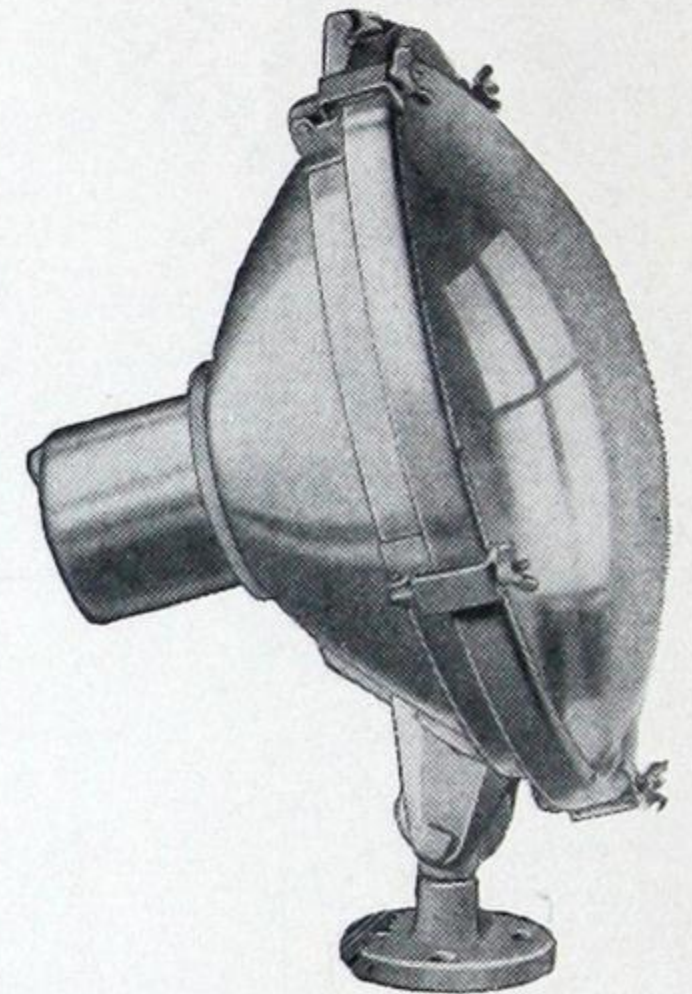
First: The illumination of buildings and monuments for their advertising value, or for their aesthetic effects. This type of floodlighting involves the illumination of vertical surfaces. The floodlights are located either some distance from the surface to be lighted, or they may be mounted on the structure itself. The quantity of light needed for this type of problem is dependent upon the attraction value desired, on the color of the structure, and on the brightness of the surrounding area.

Second: The illumination of large areas for outdoor sports, parking space and industrial uses. In this classification the units are mounted on poles, or towers, for illuminating the horizontal area. The amount of light to be provided for this type of installation is dependent upon the activities involved, the light being needed for utilitarian rather than artistic purposes.



Inside Lenses

Easily installed, hinged for easy access to lamp. Available for all projectors, in ruby, amber, blue, green, clear and one-half sanded. When the projector is mounted against the surface being lighted sanded half lens smooths out the illumination just above the projector. Cut also shows X-Ray Control-Ring.



CONCENTRATING TYPES

Cat. No.	Material	Lamp	
		Watts	Type
"Star" 10° to 20° Beam			
25-C	Steel	250	*G-30
205-C	Copper	250	*G-30
11527-C	Steel	200	Standard
12527-C	Copper	200	Standard
"Moon" 10° to 20° Beam			
37-C	Steel	500	*G-40
307-C	Copper	500	*G-40
11539-C	Steel	500	Standard
12539-C	Copper	500	Standard

"Sun, Jr." 15° to 25° Beam

403-C	Copper	750-1000	Standard
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"Sun" 15° to 25° Beam

49-C	Steel	1500	Standard
409-C	Copper	1500	Standard

DISTRIBUTING TYPES

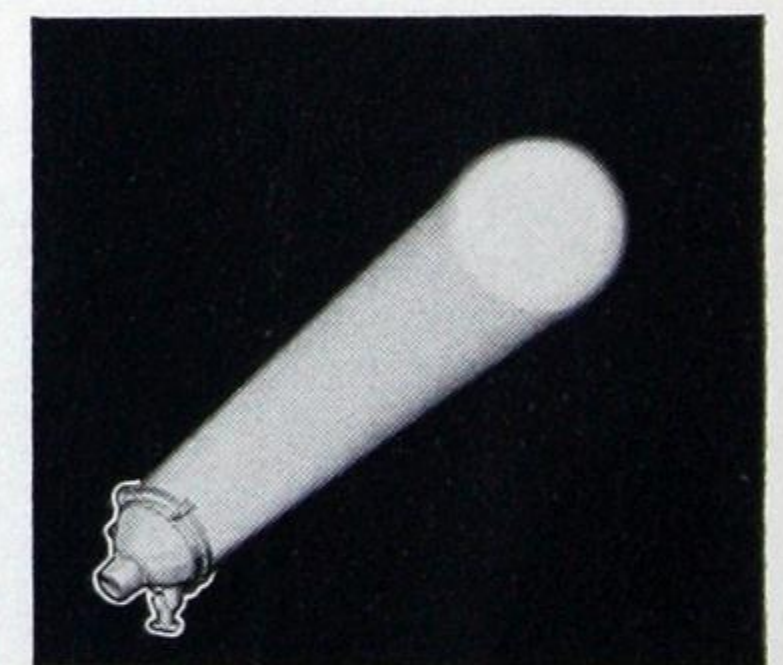
Cat. No.	Material	Lamp	
		Watts	Type
"Star" 30° to 60° Beam			
25-E	Steel	250	*G-30
205-E	Copper	250	*G-30
11527-E	Steel	200	Standard
12527-E	Copper	200	Standard

*Note: This lamp cannot be burned within 45° of base up. Use unit for standard lamp within this angle.

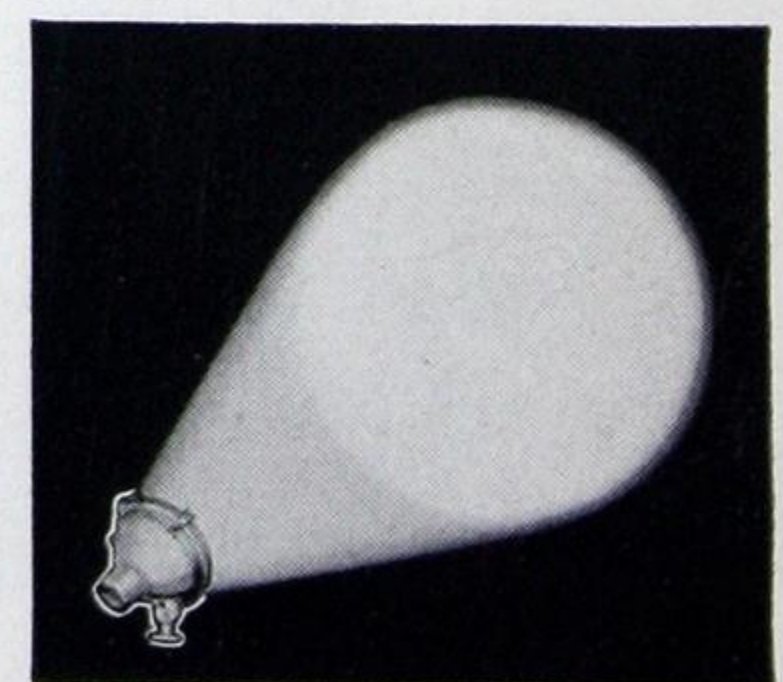
"Moon"
500 watt size
Diameter 17 1/8 in. Depth 13 5/8 in.
Height 20 3/4 in.

"Star"
200-250 watt size
Diameter 13 in. Depth 12 in.
Height 16 1/2 in.

These units equipped for universal adjustment and simple lamp focusing device.



Concentrating



Distributing

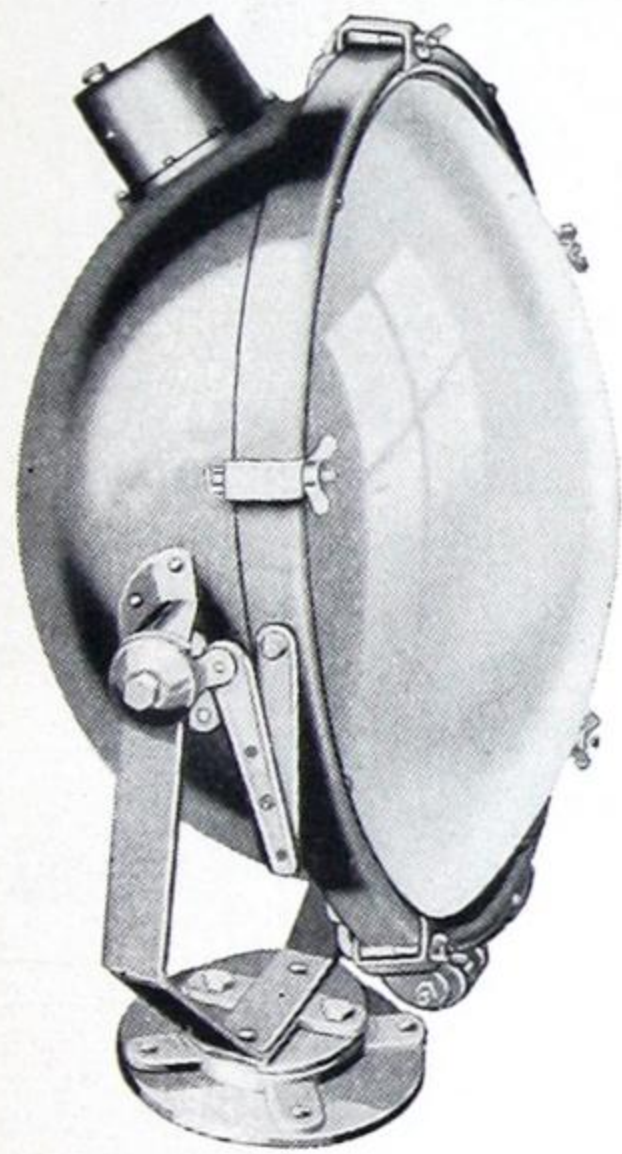
These photographs show the flexibility, "light control" and power of X-Ray Floodlighting Projectors, illustrating their practicability for many purposes.

The following table indicates intensities of illumination recommended. There is also given a column indicating the wattage which should be provided per square foot of area to be lighted. This table is for white lighting. For color lighting the amount of wattage needed depends upon the color of the surface, the color of light desired, and the brightness of the surroundings.

FOOT-CANDLES AND WATTAGE CAPACITY FOR FLOODLIGHTING

Spaces or objects to be lighted	Foot-candles recommended	Watts per sq. ft.
Automobile parking spaces.....	1	0.2
Building excavation.....	3	0.5
Floodlighted buildings and monuments:		
In bright surroundings: <i>Light surface</i>	10	2.2
<i>Dark surface</i>	20	4.5
In dark surroundings: <i>Light surface</i>	6	1.5
<i>Dark surface</i>	12	2.5
Gasoline filling stations.....	4	0.8
Golf.....	10	2.0
Playgrounds.....	4	0.8
Railway yards.....	0.25	0.05
Stadiums, football, etc.....	12	2.5
Swimming pools (outdoor).....	5	1.2

Where the light is to be confined to small areas, or for illuminating from long distances, the "C" (concentrating) type unit should be specified. For illuminating large areas from relatively short distances, the "E" (distributing) type should be used.



"Sun"

Diameter 23 in. Depth 14 3/4 in.
Height 31 in.

"Sun, Jr."

Diameter 19 in. Depth 12 in.
Height 26 1/2 in.

All X-Ray Projectors are supplied with silver mirrored reflectors designed for the most efficient utilization of light, and are available for all sizes of floodlighting and standard lamps. The housings are non-ventilated and are equipped with deep bowed heat-resisting clear glass cover, or ribbed glass cover, for producing a rectangular beam.

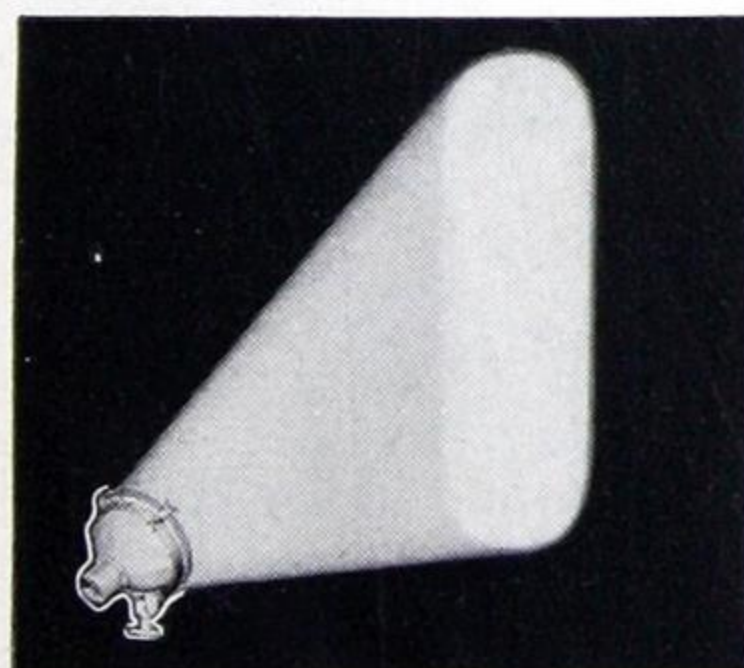
"Sun" and "Sun, Jr." Projectors are equipped with cast trunion base, which allows for universal adjustment. For use with standard PS bulb lamps. "Angle Stops" are available which make it possible to swing back the projector for relamping and resetting it to its original position without readjustment.

RECTANGULAR BEAM TYPES

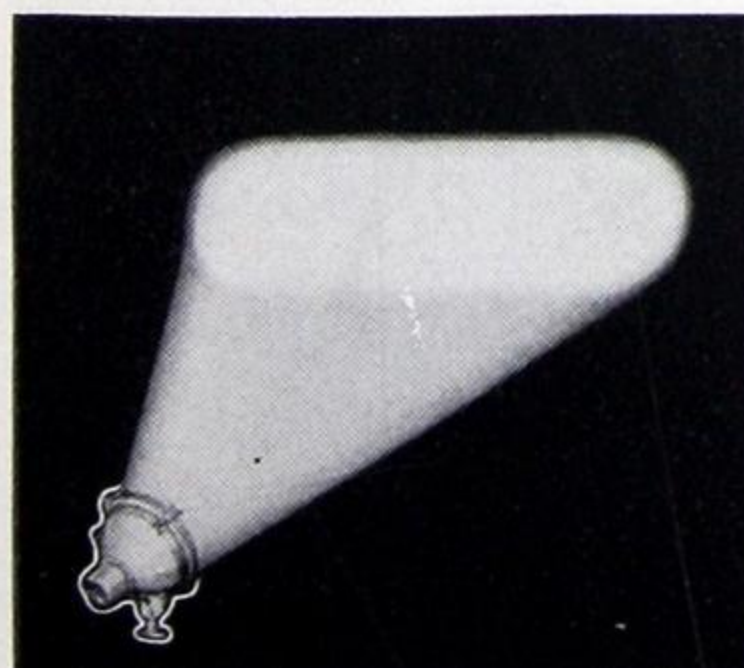
Recommended where it is desired to secure a shaft or band of light from a point some distance away.

Rectangular Beam X-Ray Projectors with lamp in concentrating position have ratio of 1 to 3 in width to length of beam.

When the lamp is in the distributing position, the ratio is 1 to 1 1/2.



Rectangular Beams



Cat. No.	Material	Lamp	
		Watts	Type

"Star" 10° by 25° to 20° by 25° Beam

11529-C	Steel	250	*G-30
12529-C	Copper	250	*G-30
11530-C	Steel	200	Standard
12530-C	Copper	200	Standard

"Moon" 10° by 25° to 20° by 25° Beam

11541-C	Steel	500	*G-40
12541-C	Copper	500	*G-40
11540-C	Steel	500	Standard
12540-C	Copper	500	Standard

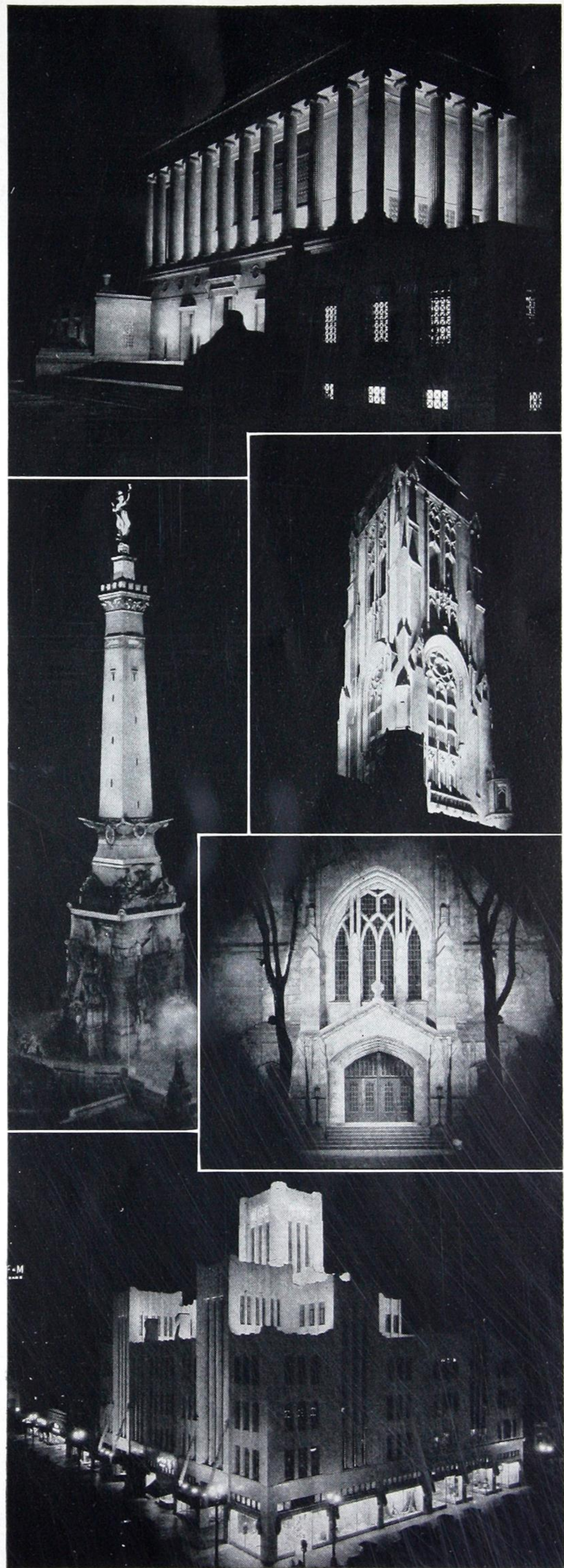
"Sun, Jr." 15° by 45° to 50° by 55° Beam

402-C	Copper	750-1000	Standard
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"Sun" 15° by 45° to 40° by 55° Beam

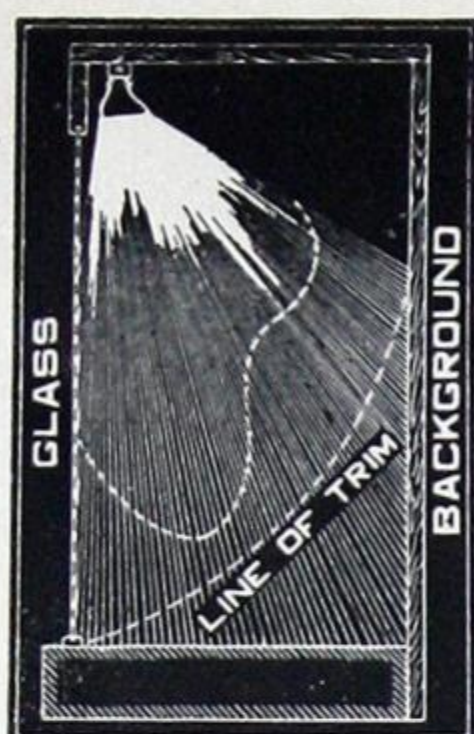
48-C	Steel	1500	Standard
408-C	Copper	1500	Standard

*Note: This lamp cannot be burned within 45° of base up. Use unit for standard lamp within this angle.



SHOW WINDOW LIGHTING

With Genuine **X-Ray Reflectors** Golden Armored

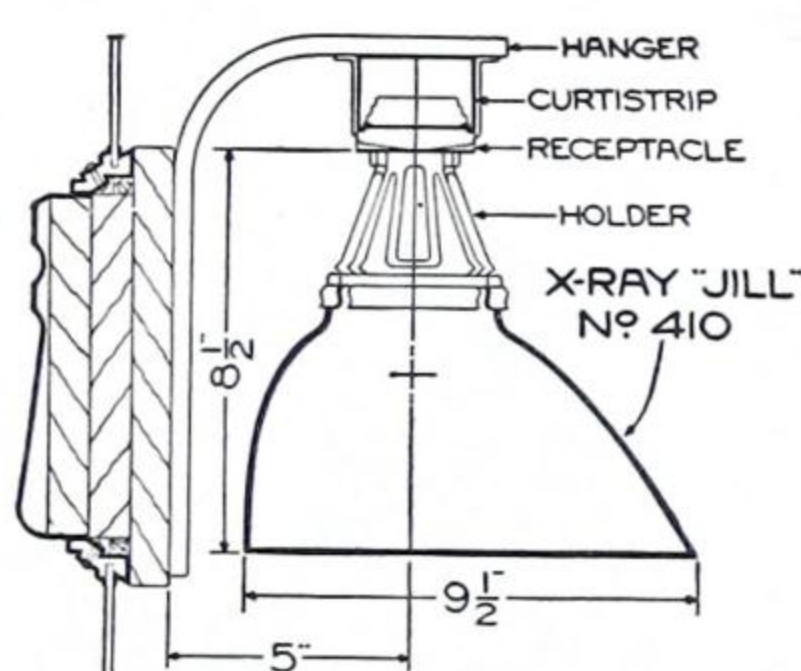


Show windows having a depth of one-half to two-thirds of the height should be lighted with reflectors designed especially . . .

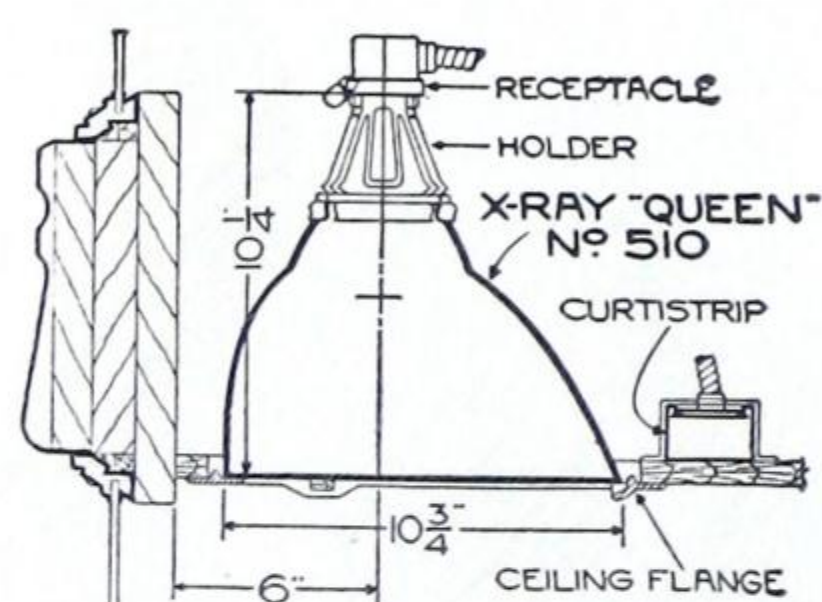
For Shallow Windows



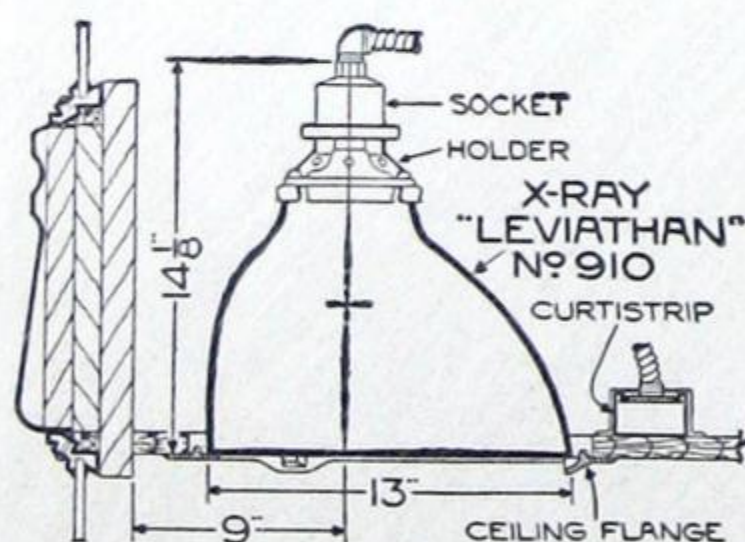
No. 410 "Jill," 150 Watts
No. 510 "Queen," 200 Watts
No. 910 "Leviathan" 500-300 Watts



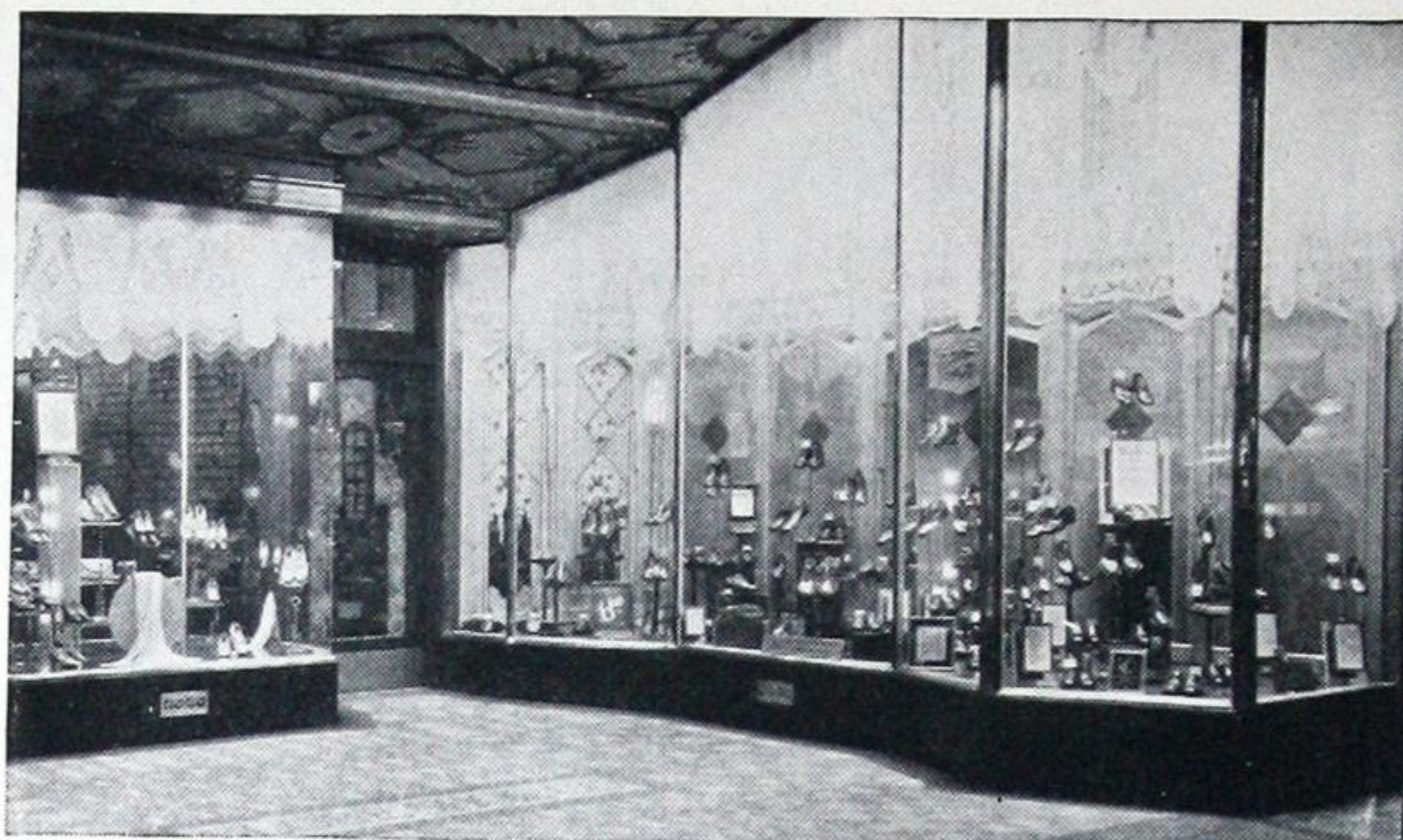
No. 410 (Width: 9 3/8 In.) 150 Watt Lamp
Showing No. 17 Hanger Mounting



No. 510 (Width: 10 1/2 In.) 200 Watt Lamp
Recessed Above Window Ceiling



No. 910 (Width: 13 In.) 500-300 Watt Lamp
Recessed with Finishing Flange



There are only two types of windows according to size—deep or shallow as shown in the diagrams. The closer reflectors are spaced, the brighter the windows will be and vice versa. Average spacing for business districts in large cities, 12 in.; suburban districts, 12 to 18 in.; small cities, 12 to 18 in.; towns, 15 to 24 in. Determine spacing of reflectors according to locality of store, brightness of adjacent windows or street lighting.

Use the following data to determine proper reflector.

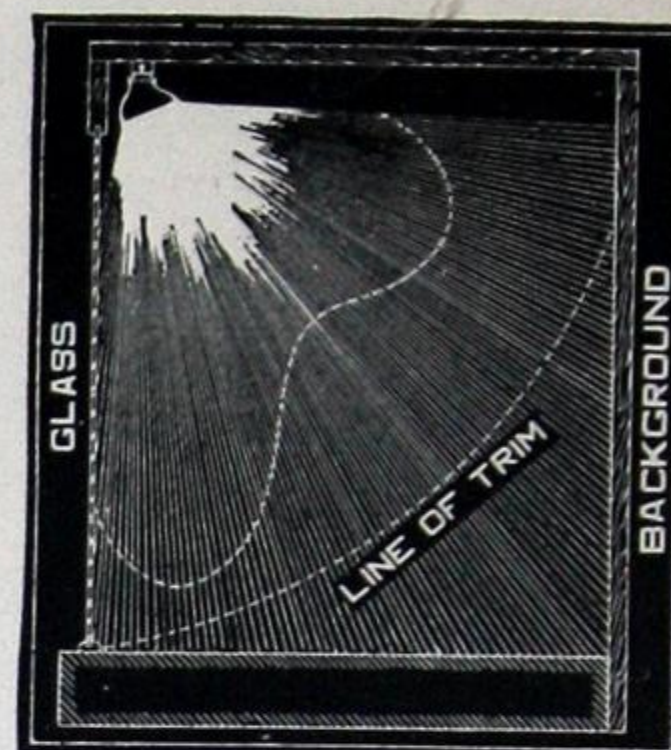
WINDOW IN FT.		HEIGHT OF DISPLAY OR SOLID BACKGROUND IN FEET.							
HEIGHT	DEPTH	0-2	2-4	4-6	6-8	8-10	10-12	12-14	14-16
4-6	1-3	410							
"	3			400					
"	4				400				
"	5								
6-8	2	410							
"	3-5			400					
"	5-7				400				
"	7-9								
8-10	2-4	510							
"	4-6								
"	6-8								
"	8-10			500					
"	10-12								
10-12	3-5	510							
"	5-6								
"	6-8								
"	8-10					500			
"	10-12								
12-14	4-6	510							
"	6-8								
"	8-10								
"	10-12					500			
"	12-14								
"	14-16								
14-16	4-6	510							
"	6-8								
"	8-10								
"	10-12					500			
"	12-14								
"	14-16								

For "super-lighting" in large windows, Nos. 900 and 910 should be used in place of Nos. 500 and 510 respectively

Methods of Installing

The construction of show windows often determines the method of installing window reflectors. Diagrams show dimensions, data and offer suggestions for installing for various conditions. CurtiStrip (see Page 17) provides neat, flexible installation and saving in installation cost.

Where reflectors are recessed above false ceiling, finishing flanges are available (see Page 22). Louvres and equipment for color lighting also shown on Page 22.

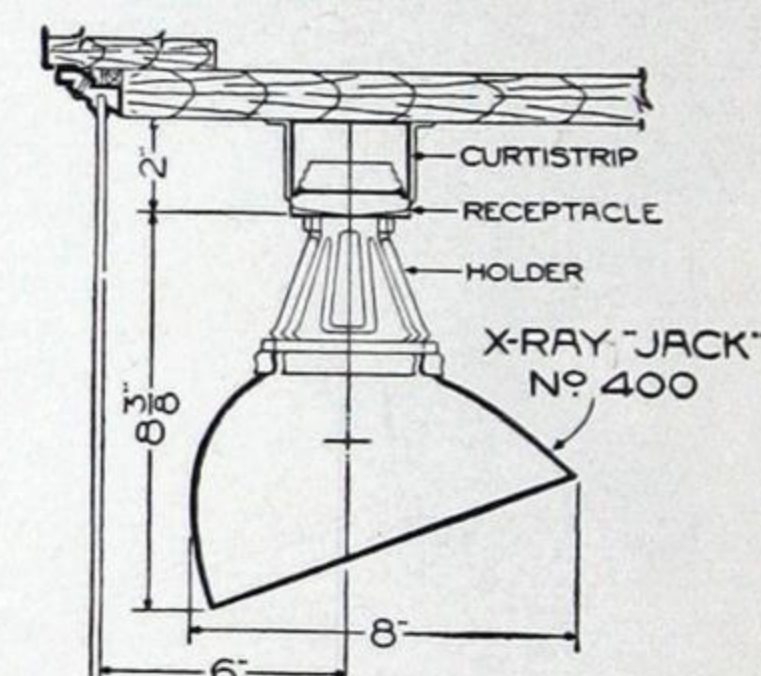


Show windows having a depth or trim about equal to the height should be lighted with reflectors designed especially . . .

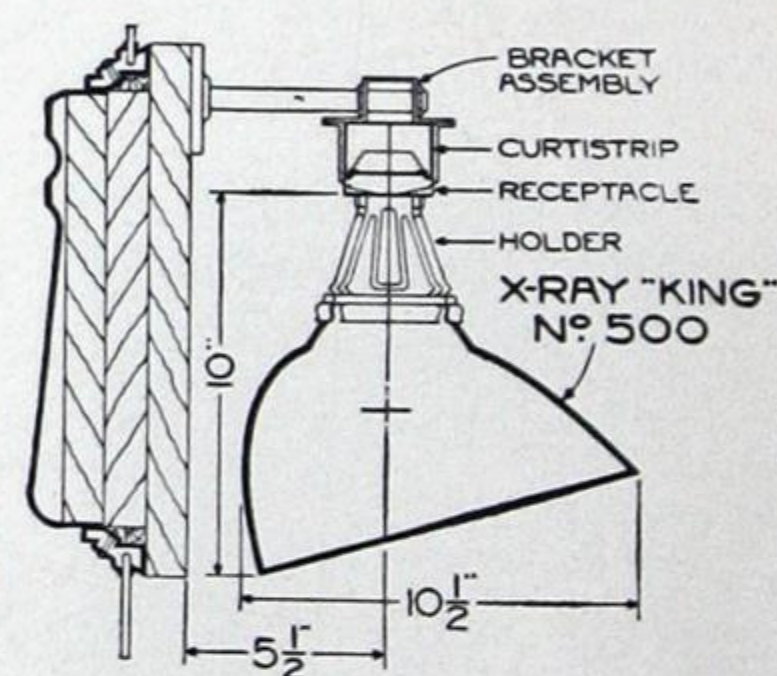
For Deep Windows



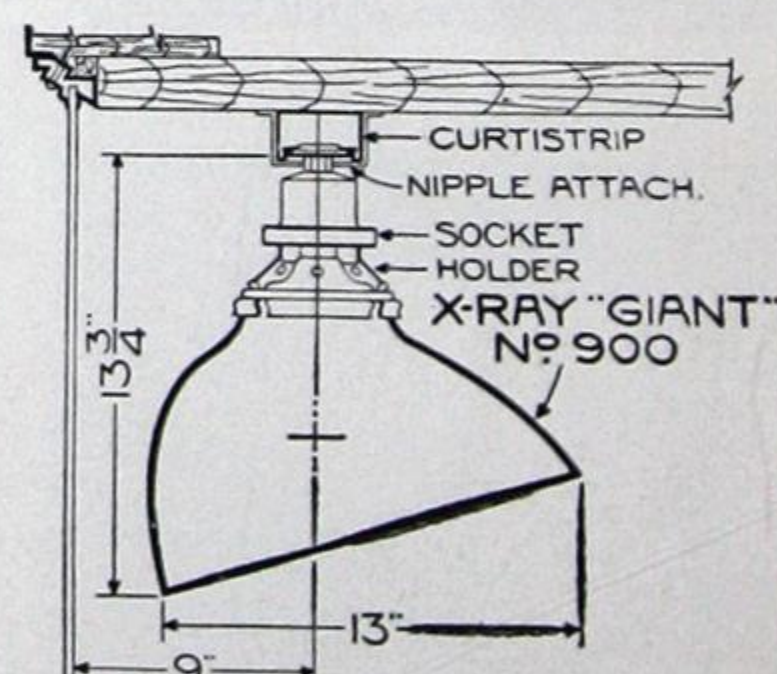
No. 400 "Jack," 150 Watts
No. 500 "King," 200 Watts
No. 900 "Giant," 500-300 Watts



No. 400 (Width: 8 1/2 In.) 150 Watt Lamp
Showing Ceiling Mounting



No. 500 (Width: 10 In.) 200 Watt Lamp
Showing No. 24 Bracket Assembly



No. 900 (Width: 13 In.) 500-300 Watt Lamp
Showing Ceiling Mounting

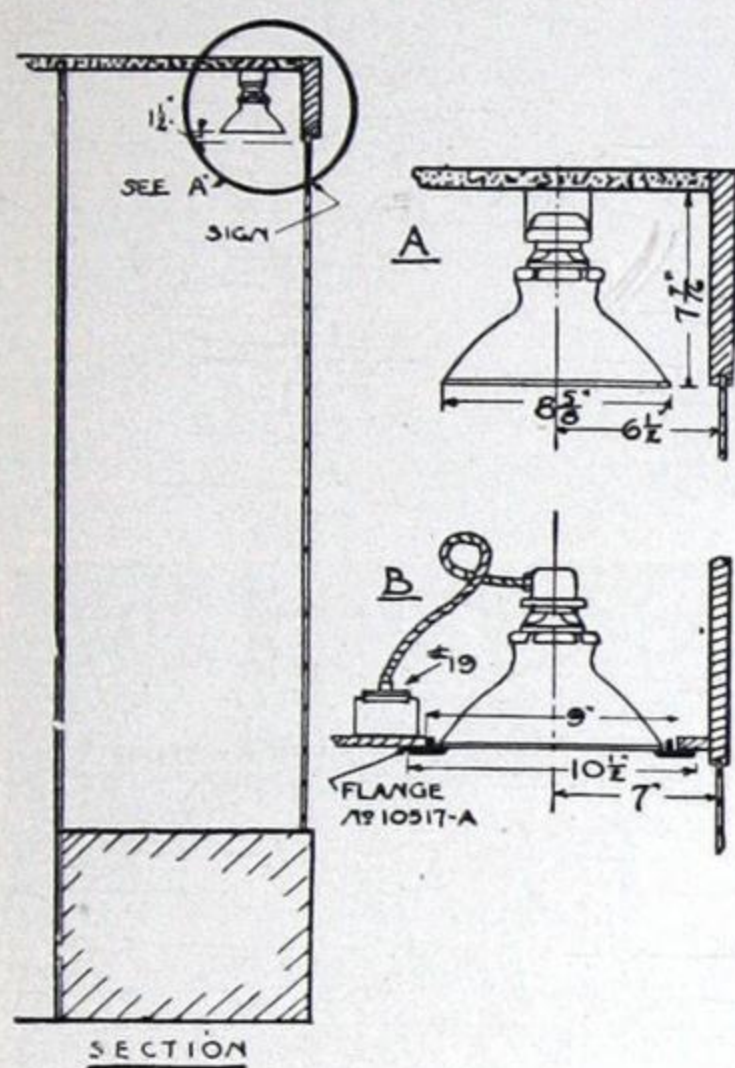
Lighting Narrow Show Windows

Very narrow or shallow show windows require concentrated lighting provided by X-Ray No. 844, 100-watt Reflector. This insures uniform lighting for displays that trim "top-to-bottom," as in drug stores. Where the trim is low it provides the concentration that makes the display "stand out."

No. 844 may be mounted at the ceiling, or supported from transom bar.

For recessing above false ceiling, use either the "open type" finishing flange No. 10517-A, or hinged ceiling rim, No. 13202-B, having 10-in. glass. (See Page 25.)

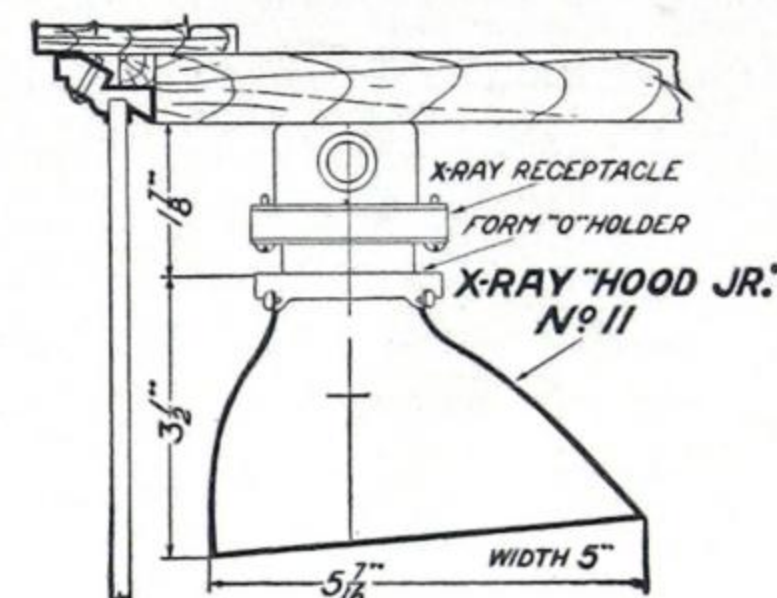
To uniformly illuminate translucent sign at top of window, bottom of reflector should be at least 1½ in. above the top of the sign with reflectors 12 in. on centers.



No. 844 delivers an intense center beam of light, as shown at the right



For recessing No. 11 in ceiling of window or case, use No. 10394 finishing flange. Minimum spacing is then 7 in. on centers



No. 11 "Hood, Jr." Reflector for 25-60-watt Lamp

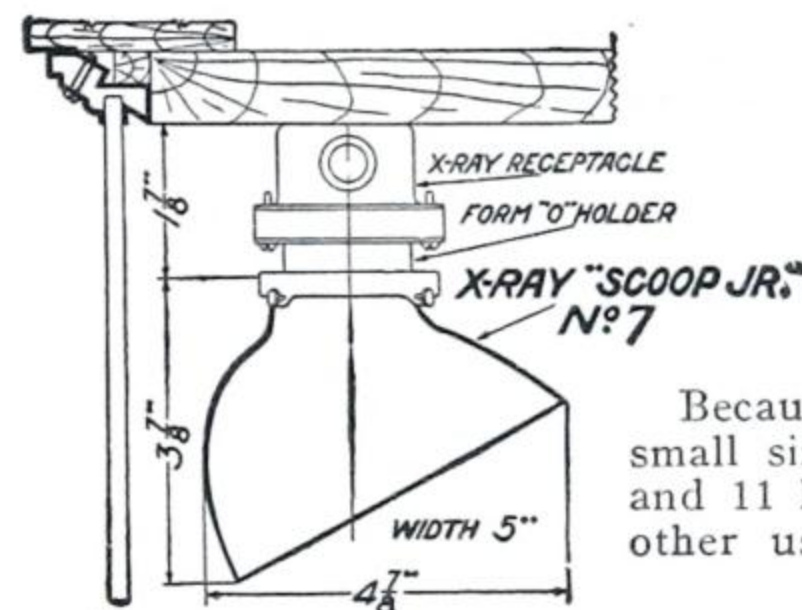
Cross section "A" shows No. 844 mounted on CurtiStrip 12 in. on centers. Reflector, 1½ in. above translucent sign.

"B" shows method of recessing No. 844, using No. 10517-A finishing flange in wood ceiling. Diameter of opening is 9 in.

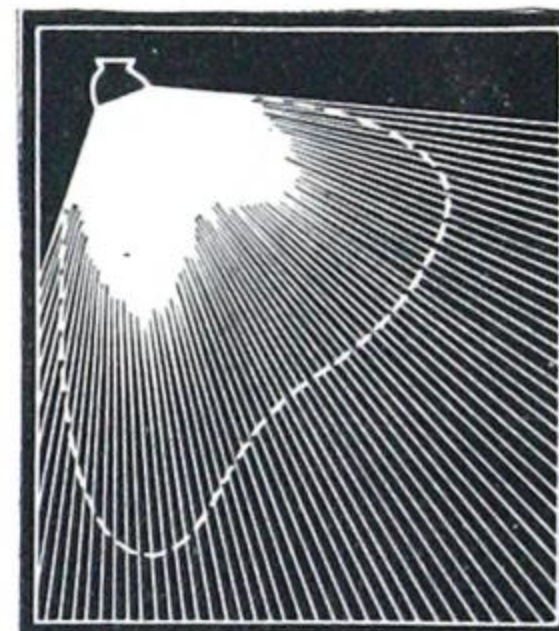
For plaster ceilings, or where hinged rim with glass is wanted, use No. 13202-B. (See page 25.)



No. 844 Reflector



Because of their small size, Nos. 7 and 11 have many other uses



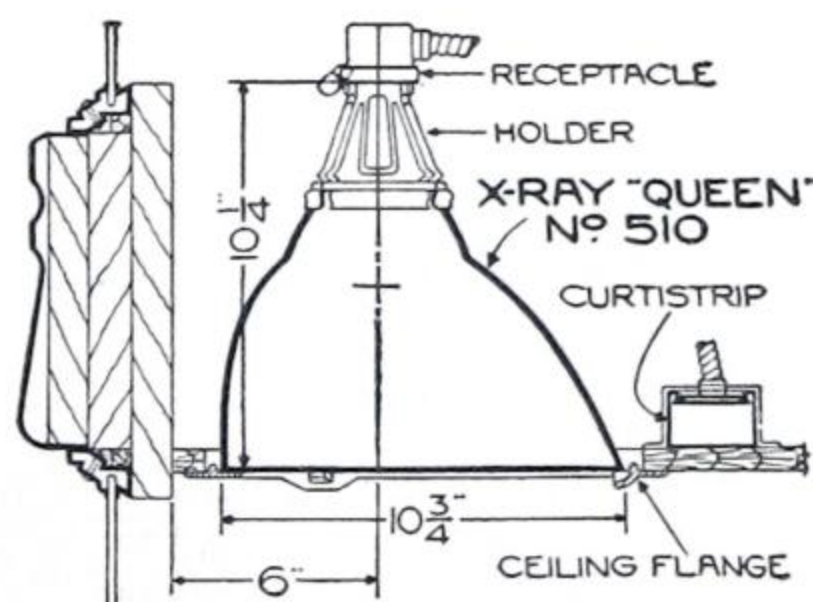
No. 7 "Scoop, Jr." Reflector for 25-60-watt Lamp

Accessories for X-Ray Show Window Reflectors

Color Lighting

Color lighting effects in show windows are produced by attaching X-Ray "Color-Ray" to window reflectors.

Each "Color-Ray" unit consists of a light-weight metal frame with spring clips for fastening to the inside of the reflector, and one sheet each of red, blue, green and amber gelatin.



Recessing Equipment Above False Ceiling

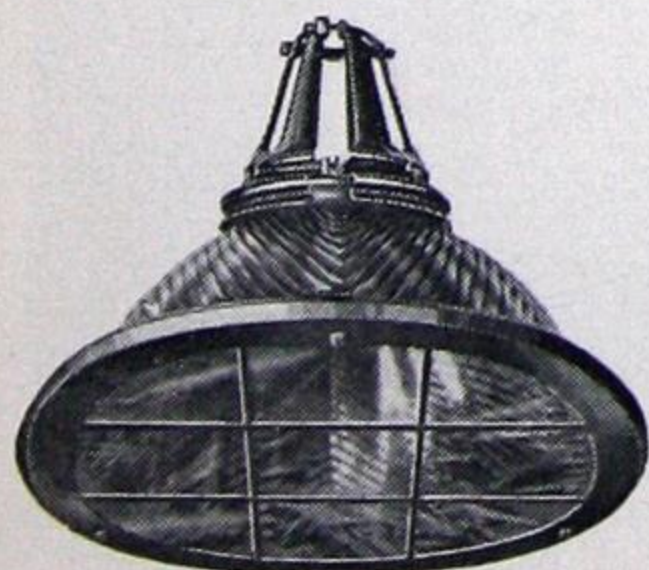
The most finished way to install reflectors is to recess them above a ceiling in the window as shown above.

X-Ray Reflector rests on flange and is connected to CurtiStrip by flexible conduit, carrying wires.

If ceiling is of wood, finishing flange only is used. For plaster ceilings plaster ring is used and installed by plaster or lathing contractor. Finishing flange attaches to plaster ring.

Reflector No.	Lamp, watts	Finishing flange No.	Plaster ring No.
11	60	10394	None
400	150	11400	None
410	150	11410	14006
500	200	11500	None
510	200	11510	14007
900	500	10432	14008
910	500	10432	14008
844	100	10517	10517-A

"Color-Ray" attached to X-Ray Window Reflector is shown to the left. Recessing reflectors does not interfere with the use of "Color-Ray"



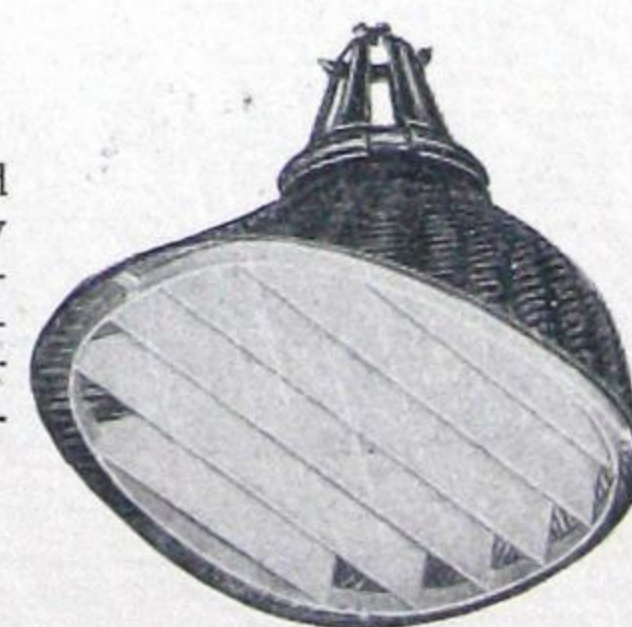
Louvers

The purpose of louvers is to eliminate glare when reflectors are in the line of vision.

In corner windows louvers have "fins" at right angles to the glass, concealing lamp filament from view and increasing effectiveness of the lighting. Such louvers are designated as type "N." Island windows have louvers with fins parallel to the glass, designated "P."

Reflector No.	Louver No.	
	Type "N"	Type "P"
400	12400-N	
410	12410-N	12410-P
500	12500-N	
510	12510-N	12510-P
900	12900-N	
910	12910-N	12910-P

Louvers are held in reflectors by spring clips. Louvers do not interfere with color equipment or recessing reflectors



INTERIOR FLOODLIGHTING

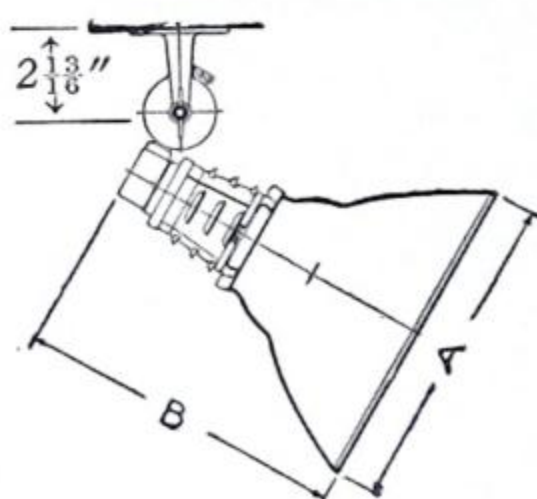
with
**X-Ray
Reflectors**

Each of the three sizes of interior floodlights has a swivel base; the distinct "light-control" of each fulfills the need for some specific purpose. 200 and 500-watt sizes are available with color frame and gelatins (red, blue, green and amber) for producing color effects.

Interior floodlights are used to highlight or spotlight either alone or supplementing other equipment. In the field of merchandising, it is profitable to spotlight regular or advertised items. In interiors, such as art galleries and museums, it beautifies and gives added prominence. In industry, the units concentrate light where it is most needed—oftentimes, where it is difficult to use other lighting equipment. In theatres and places of amusement, the opportunities are limited only by the ingenuity of the designer.

Where to Use

Church altars	Display rooms
Industrial exhibits	Community theatrics
Window displays	Theatre orchestras
Counters	Clinic lecture rooms
Merchandise displays	Hospital operating rooms
Bulletin boards	Bowling alleys
Art galleries	Night lighting bank vaults
Lodge and ritual altars	Cafeterias
Convention displays	Stair landings
Style shows	
Church windows	



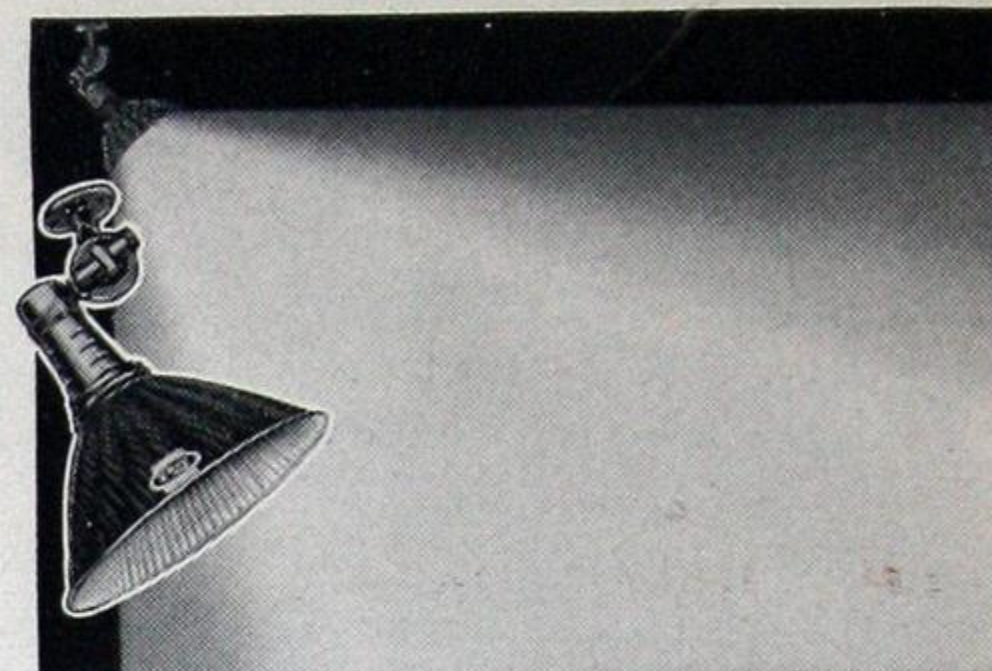
Flood of Light

For flood of light use:

No. 338—200-watt.

No. 888—500-watt.

These provide a wide flood of light with maximum concentration of 40° as shown at the right.



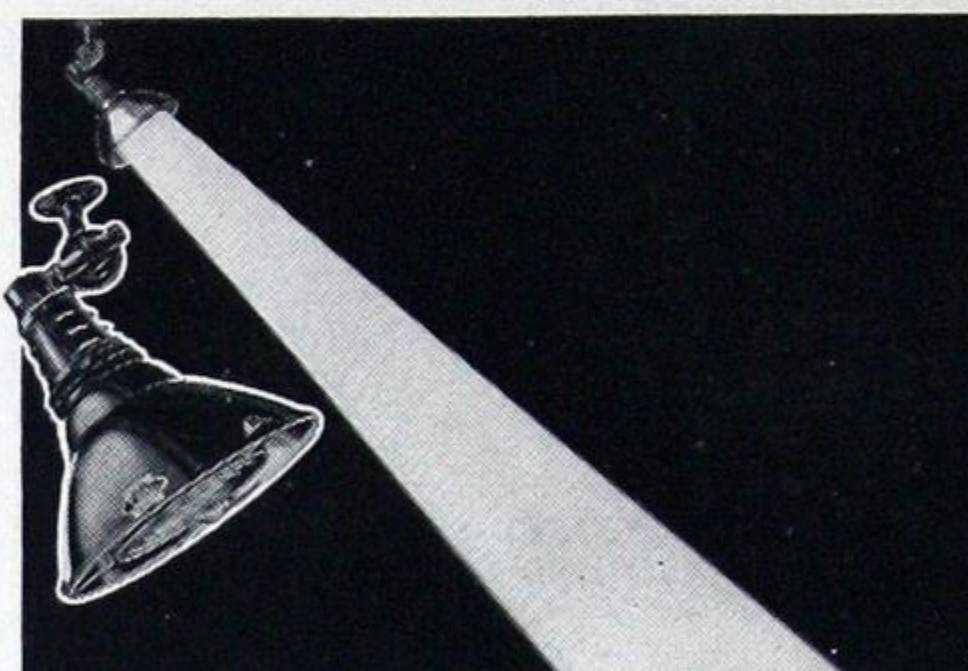
Spot Beam

For spot beam use:

No. 33-A with No. 13351—200-watt.

No. 88 with No. 18860—500-watt.

No. 13351 and No. 18860 are Control-Rings that conceal the lamp from view and help to produce a powerful "spot" of light as shown at the left.



Center Spot Beam

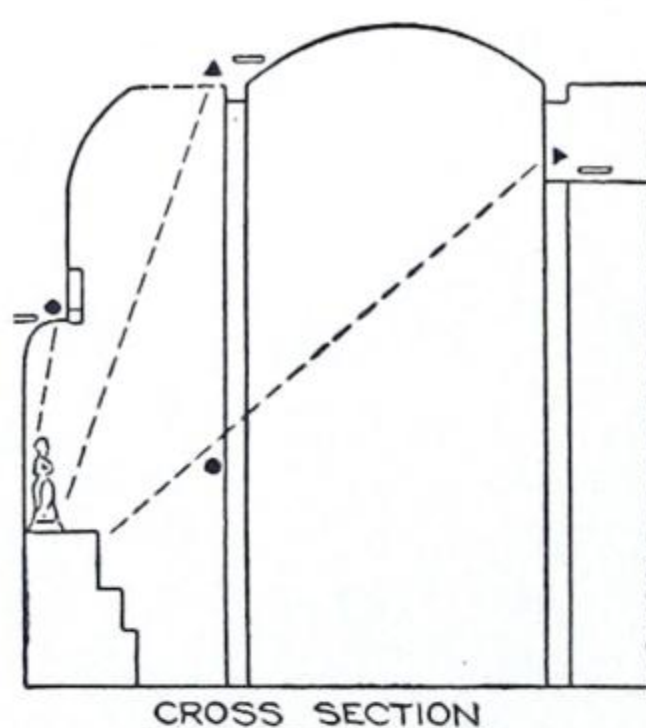
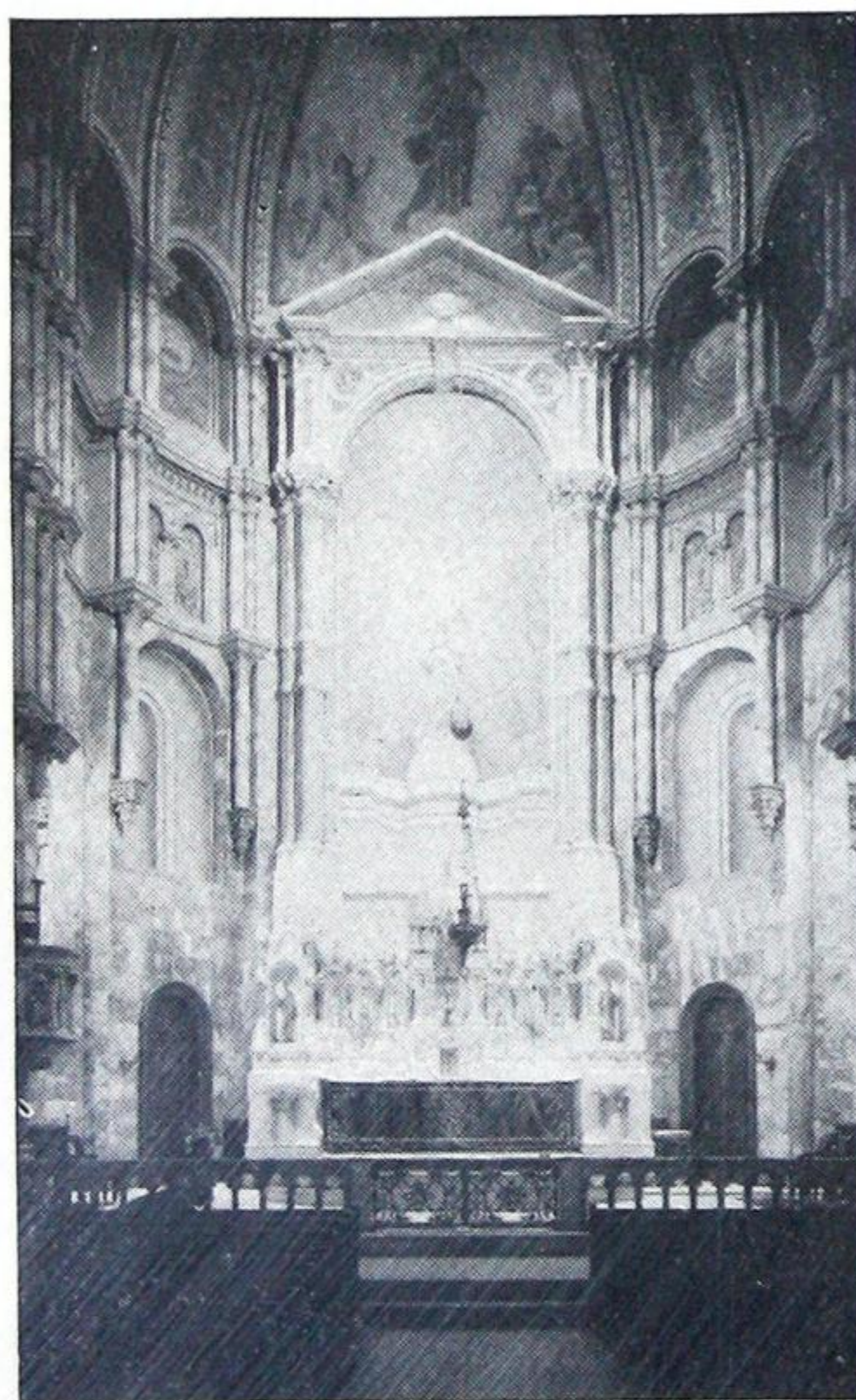
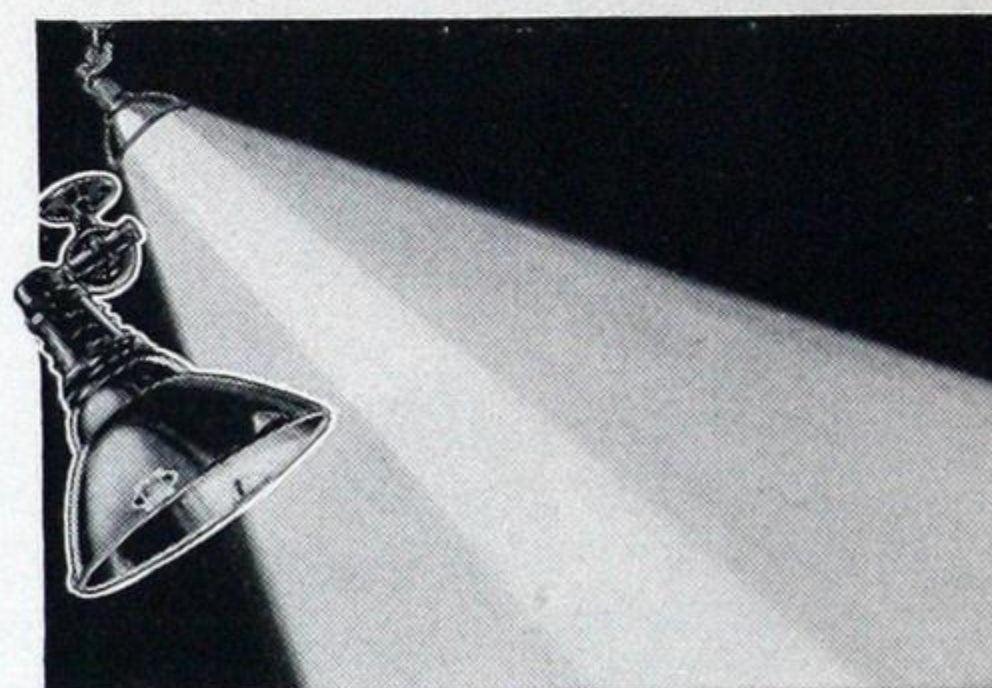
For center spot beam with flood effect, use:

No. 44—100-watt.

No. 33-A—200-watt.

No. 88—500-watt

This is shown at the right.



Showing possible locations for concealing floodlights for altar lighting. The type of unit to use depends on lighting result required.

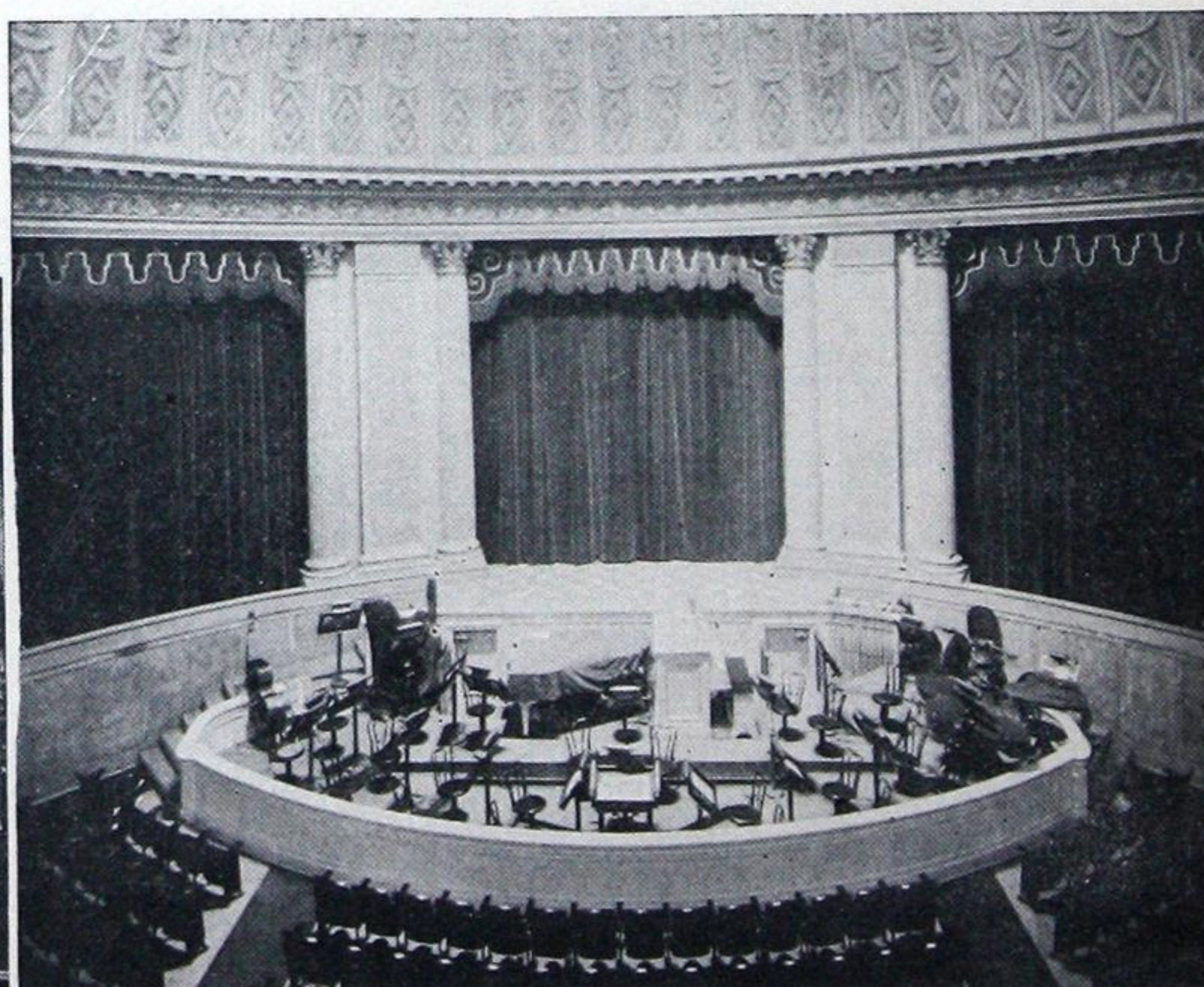


Type for	Lamp size	Catalog No.	Dimensions		Color equipment
			A	B	
Flood of Light	200-watt	338 "Floodlight".....	10 1/2"	9 3/4"	See Note 1
	500-watt	888 "Floodlight".....	13 1/4"	11 1/8"	
Spot Beam	200-watt	33-A "FloodRay" with control.....	10 1/2"	10 3/4"	See Note 1
	500-watt	88 "Hippo" with control ring No. 18860..	13 1/4"	11 1/4"	
Center Spot Beam with Flood	100-watt	44 "Pup".....	8 5/8"	7"	None
	200-watt	33-A "FloodRay".....	10 1/2"	10 3/4"	See Note 1
	500-watt	88 "Hippo".....	13 1/4"	11 1/4"	See Note 1

Diameter of base: 3 1/4 in. Distance from base to swivel joint: 2 1/8 in.

Note 1: Color equipment includes frame with red, blue, green and amber gelatins.

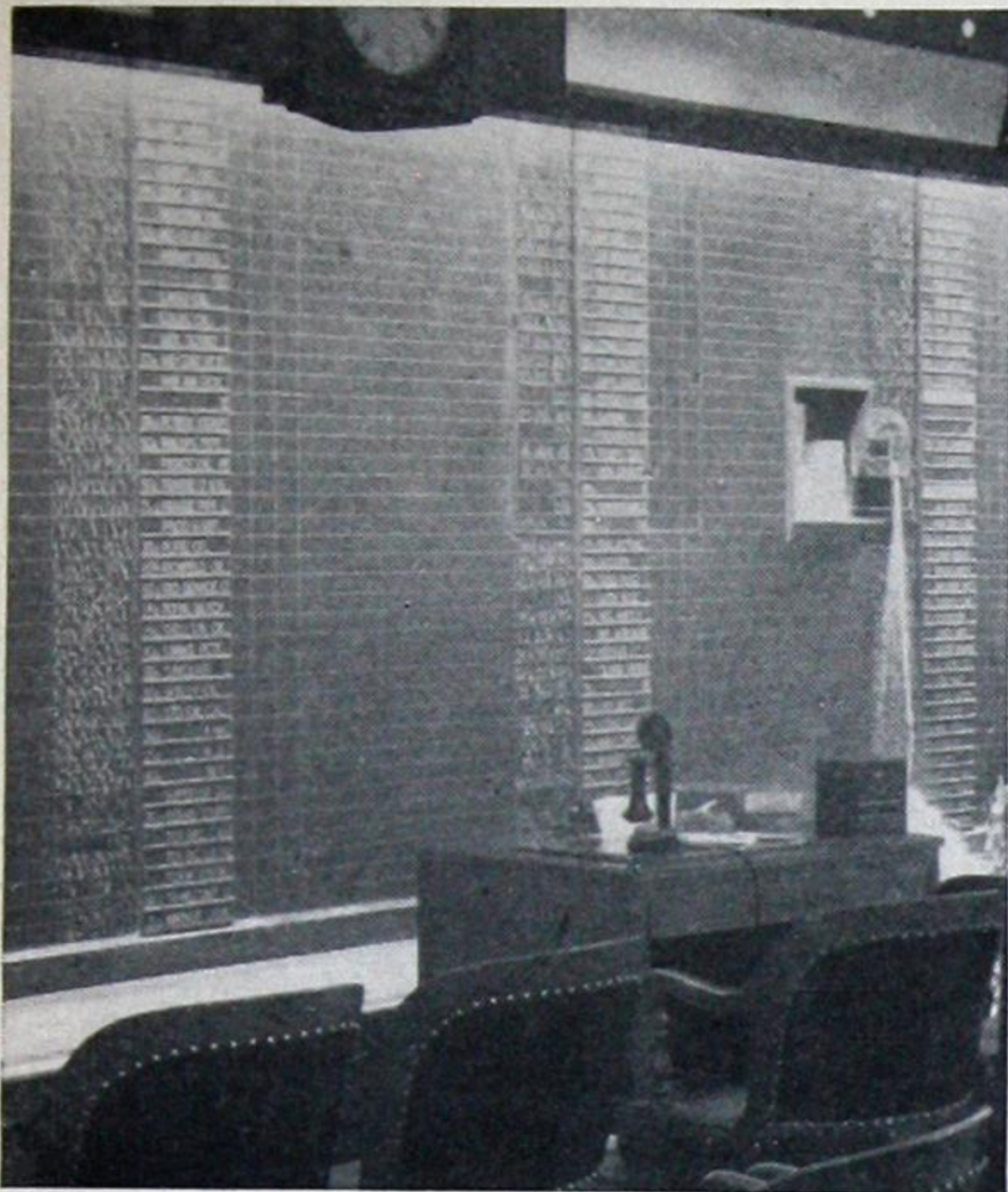
Note 2: All units can be supplied on portable stand, 54 in. high, when required.



The use of X-Ray Interior Floodlights has proven so profitable and popular, that large and small stores feature "spotlight sales" for regular or advertised special, bringing attention convincingly to items that save money, increasing turnover and profits. Used in show windows and interior of store.

Light concentrated upon the orchestra comes from No. 33-A—200-watt units, concealed in spaces provided in the ceiling. For absolute cutoff on just the orchestra pit, specify either No. 33-A with No. 13351 Control-Ring, or No. 88 with No. 18860 Control-Ring.

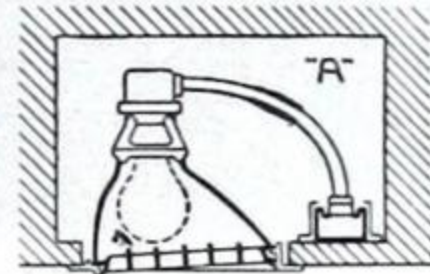
Quotation Board Lighting



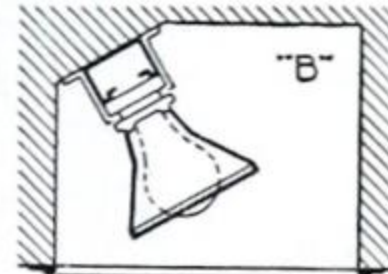
High intensity illumination is necessary on Stock Quotation Boards to quickly and accurately read quotations.

The standard method of lighting Stock Quotation Boards is best described by the diagram and photograph.

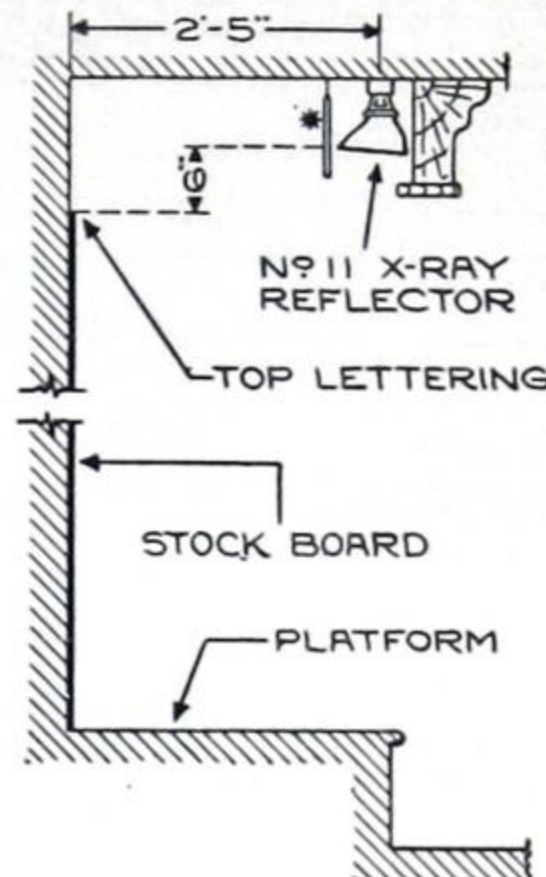
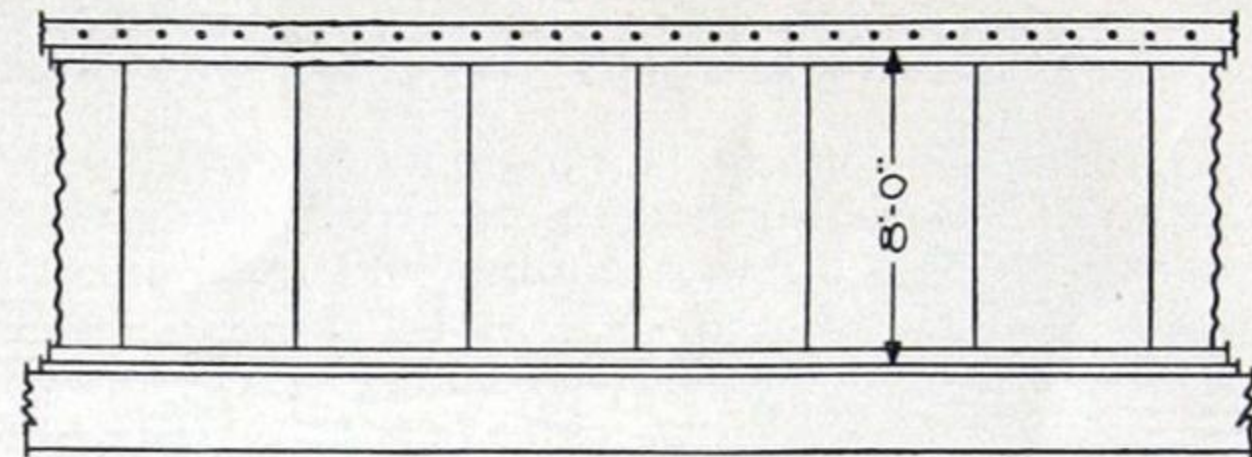
Where equipment is recessed above the ceiling two methods of lighting may be followed—spacing reflectors 12 in. on centers, and wiring on CurtiStrip. These ideas are pictured below. Distance from board to center line of reflectors should be approximately 28 in.



"A"—No. 11 (60 watt) X-Ray Reflectors mounted on CurtiStrip 12 in. on centers recessed with No. 10594 Louvre Flange; space 9 3/4 in. wide, 6 1/2 in. high.



"B"—EC-52 (60 watt) X-Ray Reflectors recessed in space 9 in. wide, 7 1/2 in. high, above rippled glass panel



SYMBOL • NO. 11 X-RAY REFLECTOR, WITH 2 1/4" FORM "H" HOLDER AND 50-60 WATT LAMP ON 12" CENTERS — MOUNTED ON CURTISTRIP AND CONCEALED BY A MOULDING USUALLY FURNISHED AS AN INTEGRAL PART OF THE STOCK BOARD

SOCKETS SHOULD BE WIRED ON SEVERAL CIRCUITS SO THAT AFTER THE DAYS BUSINESS ONE CIRCUIT ONLY NEED BE USED.

* IF A "TRANSLUX" [TAPE PROJECTOR SCREEN] IS LOCATED NEAR THE TOP OF THE BOARD, IT WILL BE NECESSARY TO BAFFLE OFF THE DIRECT LIGHT FROM THE UNITS BY MEANS OF A NARROW METAL STRIP.

Diagram shows standard Stock Quotation Board lighting, using X-Ray No. 11 Reflectors mounted on CurtiStrip, 12 in. on centers.

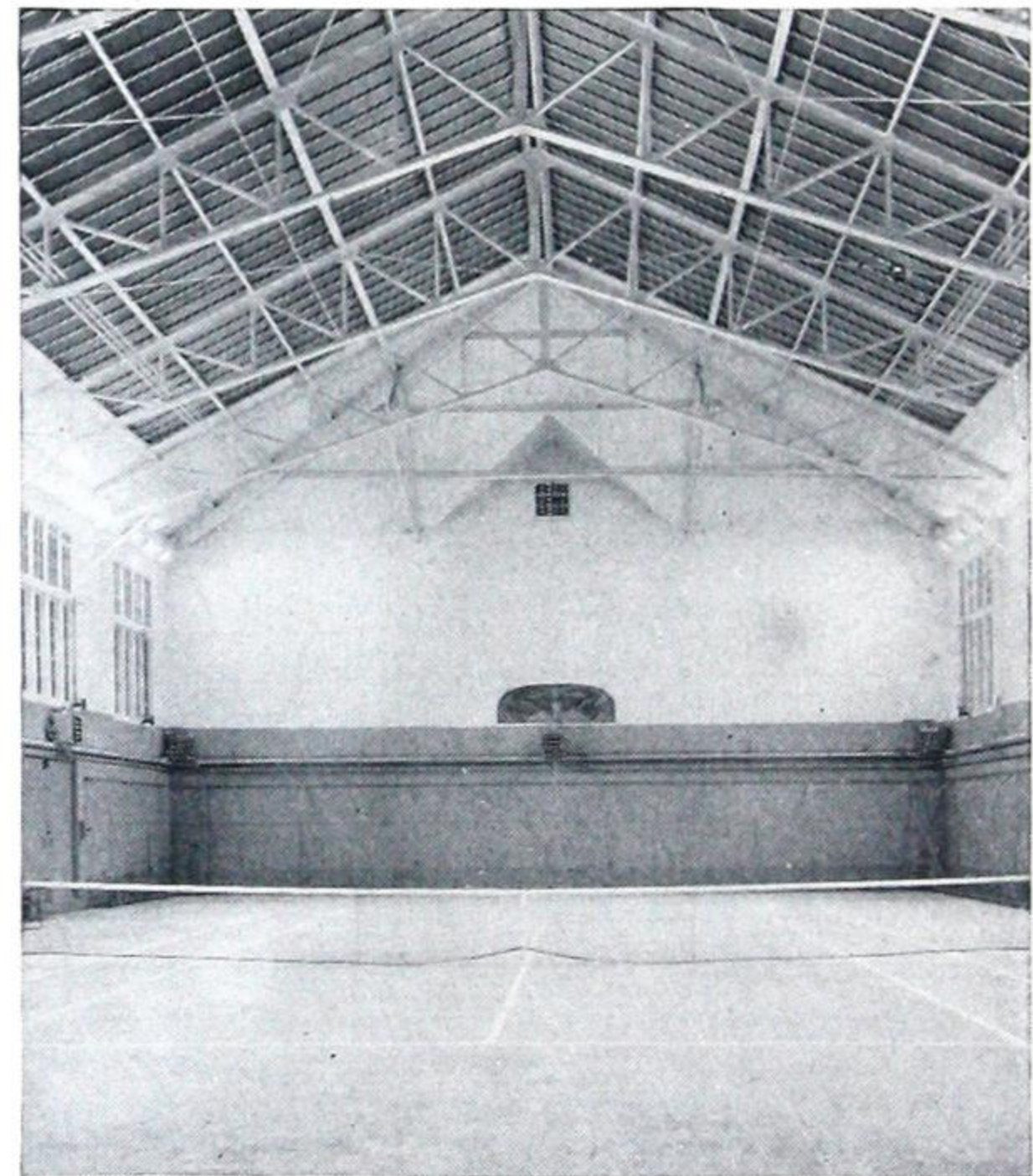
Indoor Athletic Courts

Uniform illumination of sufficient intensity and without glare is essential for Indoor Athletic Courts.

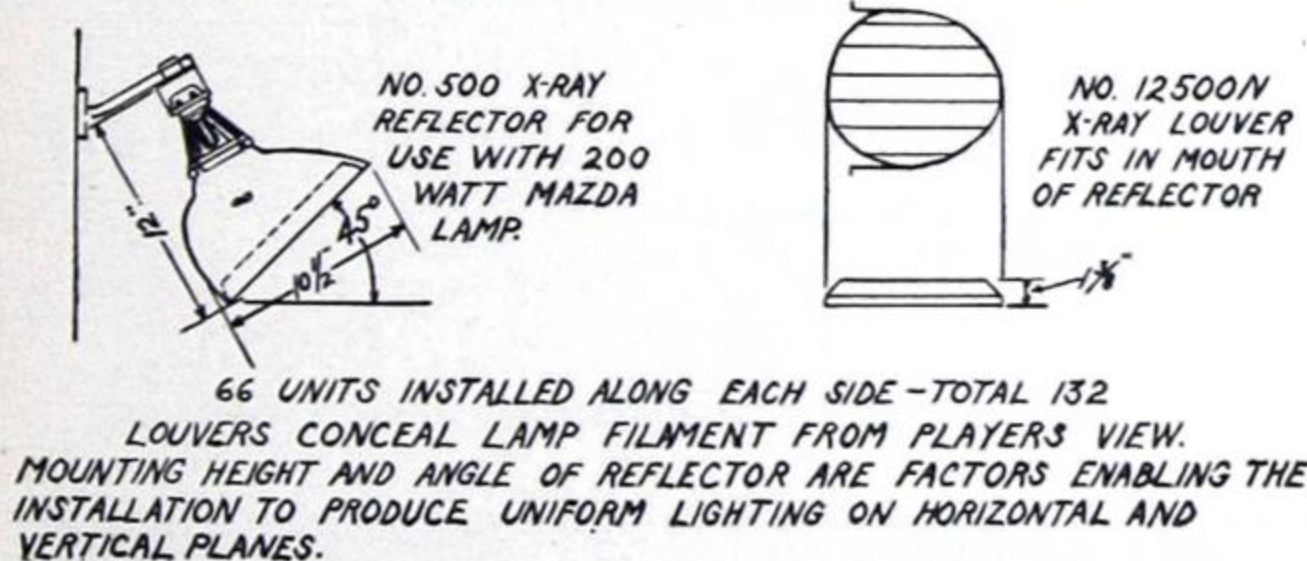
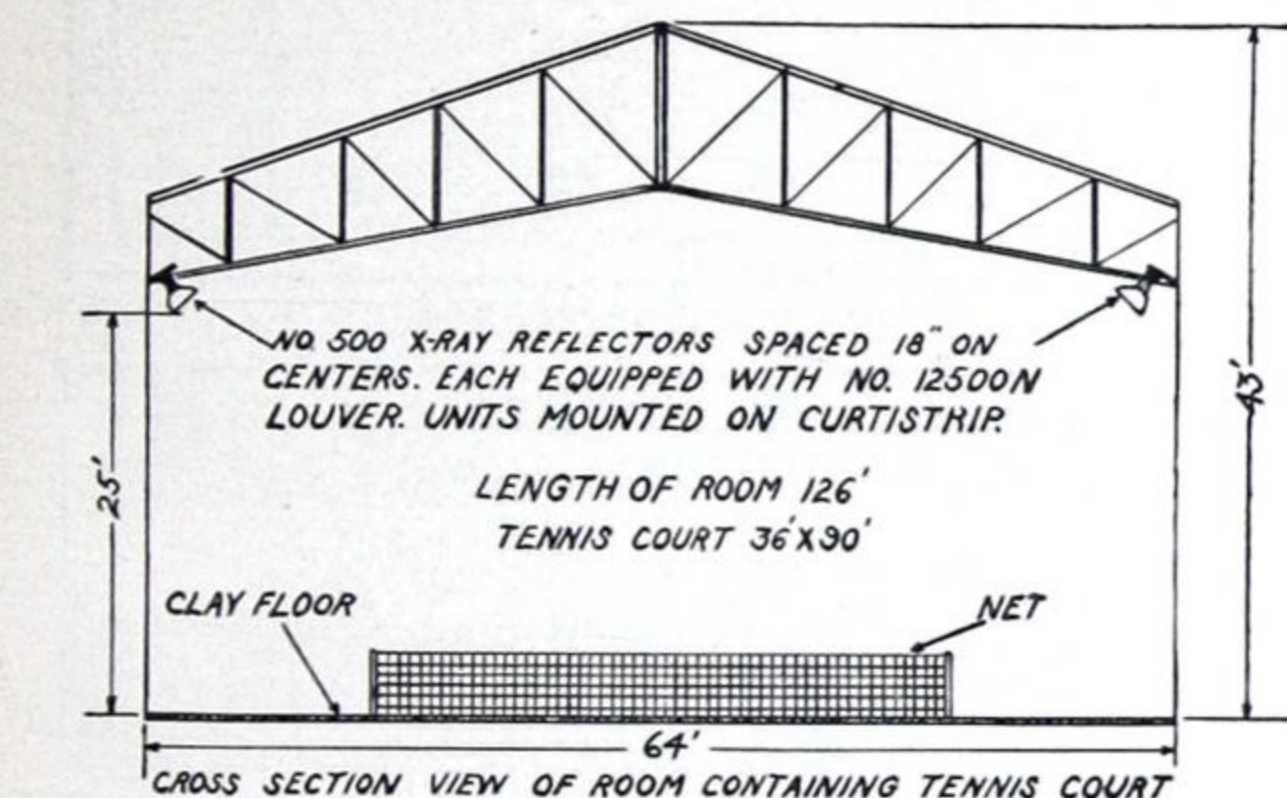
Diagram and photograph show splendid installation, using No. 500 "King" X-Ray Reflectors (200 watt lamp), 18 in. on centers along each side mounted on CurtiStrip.

Louvre No. 12500-N placed in each reflector conceals light source from view.

Wiring with CurtiStrip makes it possible to bring feed wires in at one point, eliminating necessity of several risers.



This entire indoor Tennis court is evenly lighted to a high intensity, which enables the players to see the ball quickly, thus speeding up their game.



66 UNITS INSTALLED ALONG EACH SIDE—TOTAL 132 LOUVRES CONCEAL LAMP FILAMENT FROM PLAYERS VIEW. MOUNTING HEIGHT AND ANGLE OF REFLECTOR ARE FACTORS ENABLING THE INSTALLATION TO PRODUCE UNIFORM LIGHTING ON HORIZONTAL AND VERTICAL PLANES.

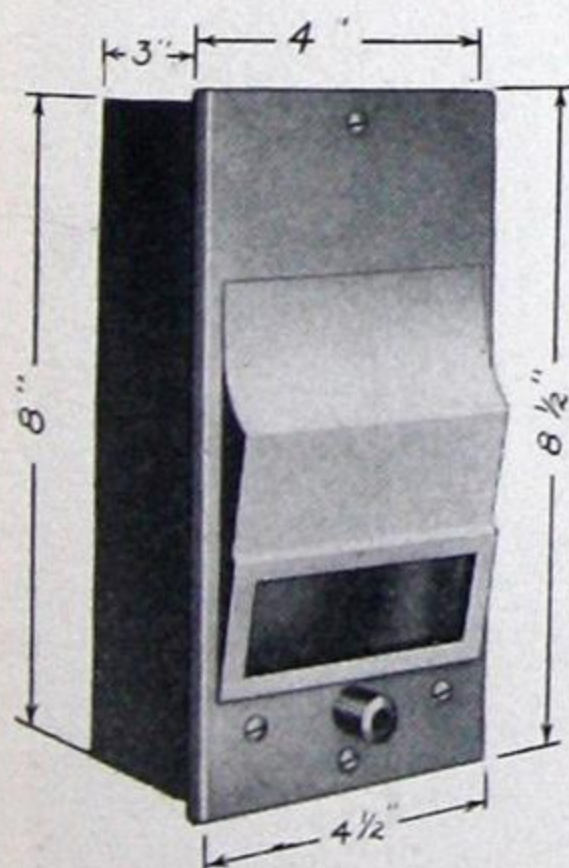
This layout used for tennis court adaptable for other sports where player should not experience "change of speed illusion." Intensity of light is very uniformly distributed.

Night Light

"Glo-Ray" night light is installed about 18 in. above the floor to provide adequate light for stairways, stair landings, corridors, rooms in hospitals, theatres, hotels, dormitories and other buildings. It may be installed in a wall 3 in. deep. The cover fits flush against the wall and is removable to facilitate wiring.

Incorporated in each night light is an X-Ray Reflector which assures evenly distributed illumination. The amount of light passing through the glass window can be changed from the full amount to just a "glow." This is controlled by a simple shutter which can be quickly and easily regulated.

The unit is durably constructed and provided with a wiring compartment in the top. Feed wires can be brought in from both sides, top, or bottom. The cover, which is zinc plated, is ready to be painted the same color as the walls.



"Glo-Ray"

Dimensions
Cover
8 1/2 x 4 1/2 in.
Box
8 x 4 in.
3 in. deep

Cat. No.	Lamp		Finish	
	Number	Watts	Cover	Box
22	1	15 or 25	Unfinished	Black enamel



"Glo-Ray" night light is especially desirable in hospitals, because it permits nurses to step into rooms without turning on lights which would be disturbing to patients.

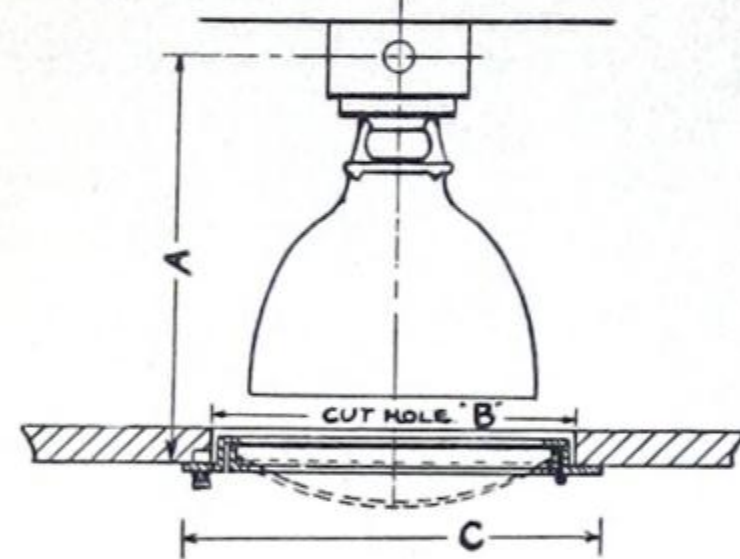
CEILING FLANGES FOR FLUSH MOUNTING

Lighting equipment is mounted flush with the ceiling wherever low ceiling heights or architectural arrangement make recessing lighting equipment necessary. Also for gymnasiums, auditoriums, safety deposit vaults, under balconies, stores, indoor swimming pools, skating rinks, hospital operating rooms, churches, etc. This same equipment is used where space permits to recess and conceal equipment for lighting interiors of buildings, gasoline filling stations, etc.

Spacing Wattage—Spacing between units should not exceed twice mounting height. Two watts per square foot will provide approximately ten foot-candles.



Ceiling Flange with
Hinged Rim



Flanges With Hinged Rim

The hinged type of ceiling flange may be installed either in plaster, wood or metal ceiling. For plastered ceilings light weight cast iron "Plaster Rings" attached to the lath by the lathing or plastering contractor provide a ground and support for hinged ceiling flanges.

The following table gives combinations generally used in specifying hinged ceiling flanges with either cracked glass and/or wire guard.

Note: All cracked, sanded or clear glass mentioned on this page is heat resisting.

FOR SIZE LAMP INDICATED USE:
(Read down)

Size of lamp, watts.....	100	150	200	300-500
X-Ray reflector, No.....	535	570	575	585
Recessing dimensions, A.....	7 1/2"-8"	11"	11 1/4"	15"
B.....	7 3/4"	10 3/4"	10 3/4"	14 5/8"
C.....	9 1/4"	12 3/8"	12 3/8"	16 7/8"
Hinged rim with cracked glass.....	13201B	13202B	13202B	13203B
Hinged rim with cracked glass and dished wire guard.....	14501XB	14502XB	14502XB	14503XB
Hinged rim with flat wire guard (no glass).....	14501XA	14502XA	14502XA	14503XA
Plaster ring.....	14011	14010	14010	14009
*Hinged flange only (no glass).....	13201A	13202A	13202A	13203A
*Diameter of glass.....	7"	10"	10"	14"
*Clear glass.....	10445	10281	10281	10310
*Cracked glass.....	10552	10551	10551	10554
*Sanded glass.....	10553	10282	10282	10350

*These Nos. of Flanges and glass afford the opportunity of making up hinged ceiling flange units with clear, sanded or cracked glass by specifying number of both flange and glass.

Where Space Above Ceiling Is Limited—One or more lamps without reflectors are mounted on extension outlet box, using one or more X-Ray No. 8251-S (1/2-in. side outlet), receptacle, as shown in diagram below. No. 13201-B will accommodate one 60 watt lamp (depth A, 4 1/2 in.); No. 13202-B, two 60-100 watt lamps (depth A, 4 1/2 in.); No. 13203-B, four 60-100 watt lamps (depth A, 6 in.). Recess may be painted white to increase efficiency if ceiling is concrete; otherwise sheet metal box is recommended.

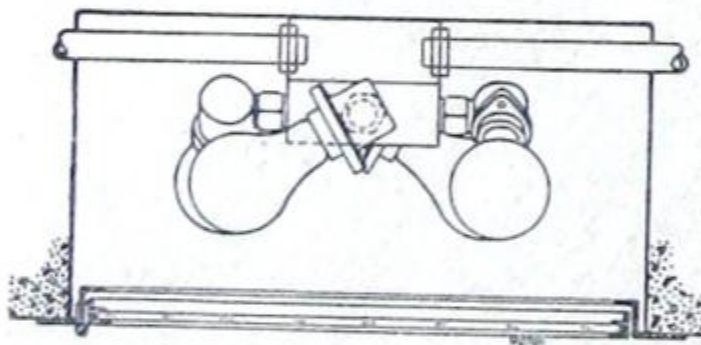
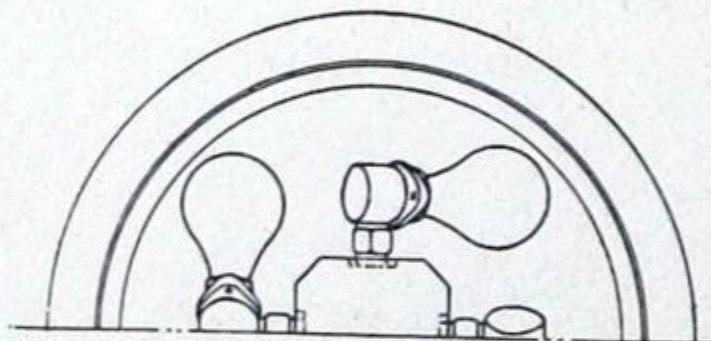


Diagram at left shows four lamps mounted above No. 13203-A. Half plan view is shown at right.

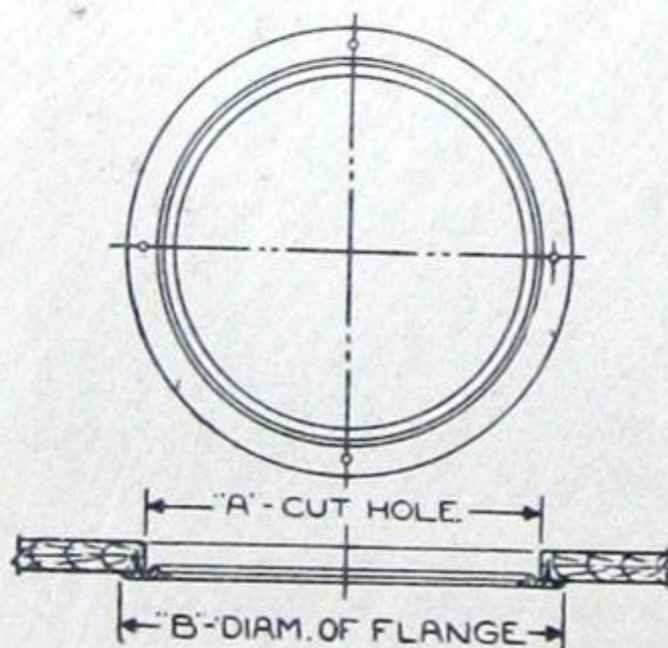


Ceiling Flanges; Not Hinged; No Glass

Where glass or wire guards are not required, use the following "open type" Ceiling Flanges. (Screw holes are 1/8-in. countersunk.)

FOR SIZE LAMP INDICATED USE:
(Read down)

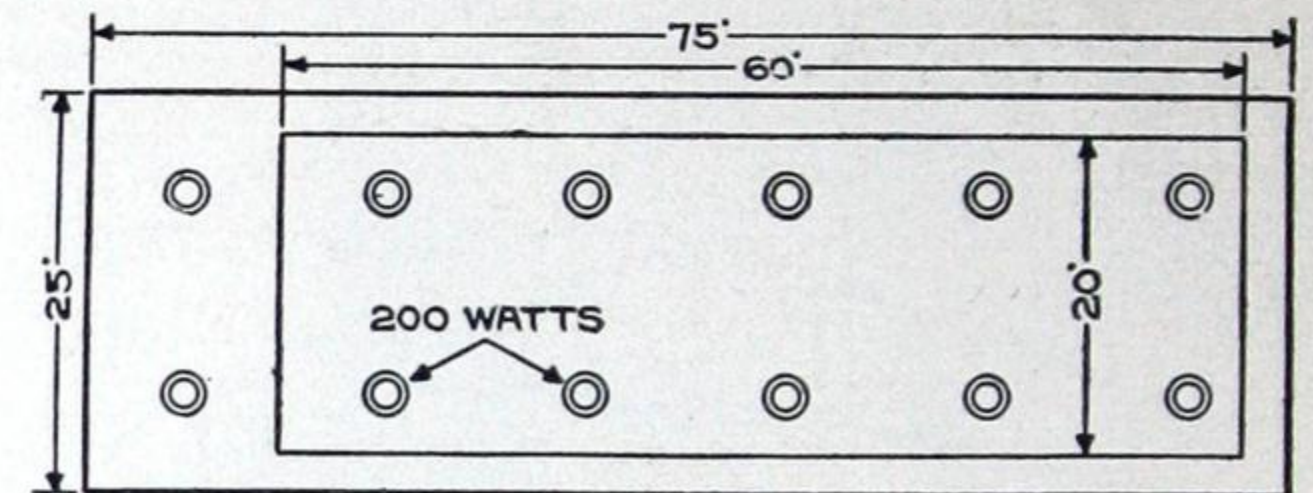
Size of lamp, watts.....	100	150
X-Ray reflector, No.....	535	570
Ceiling flange, No.....	14001-XA	14012-XA
Recessing dimensions, A.....	7 1/2"-8"	11"
B.....	7 3/4"	10"
Plaster ring, No.....	14011	14010



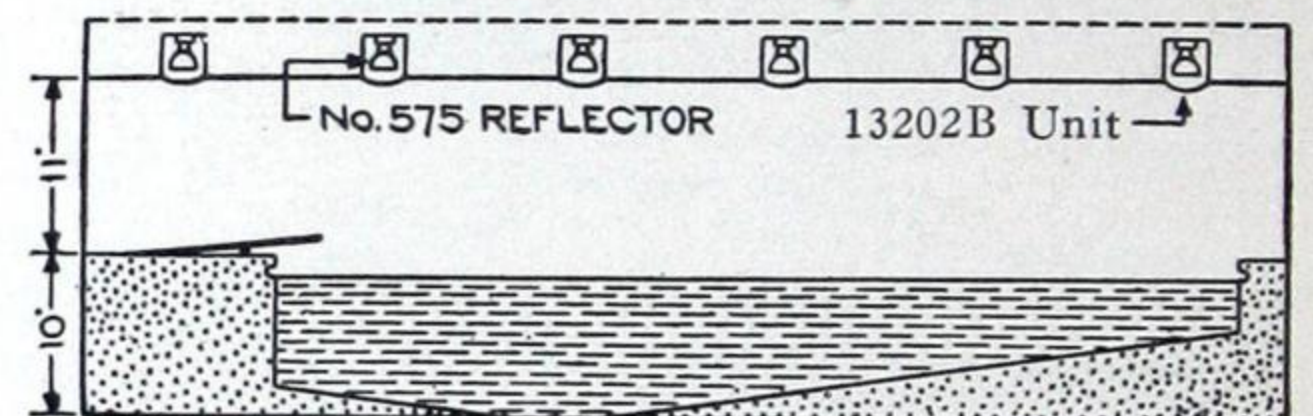
Hockey Rink, Coliseum Building, Tulsa, Okla.

SMITH and CENTER, Architects, Dallas, Tex.

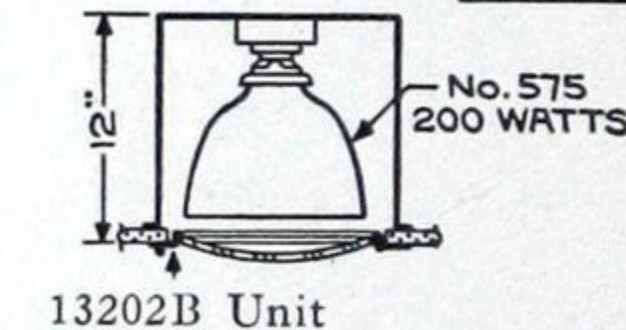
No. 590 "Big-Boy" X-Ray Reflector is recessed in space above ceiling using No. 13203-A Ceiling Flange and concentrates light upon the playing floor



REFLECTED CEILING PLAN



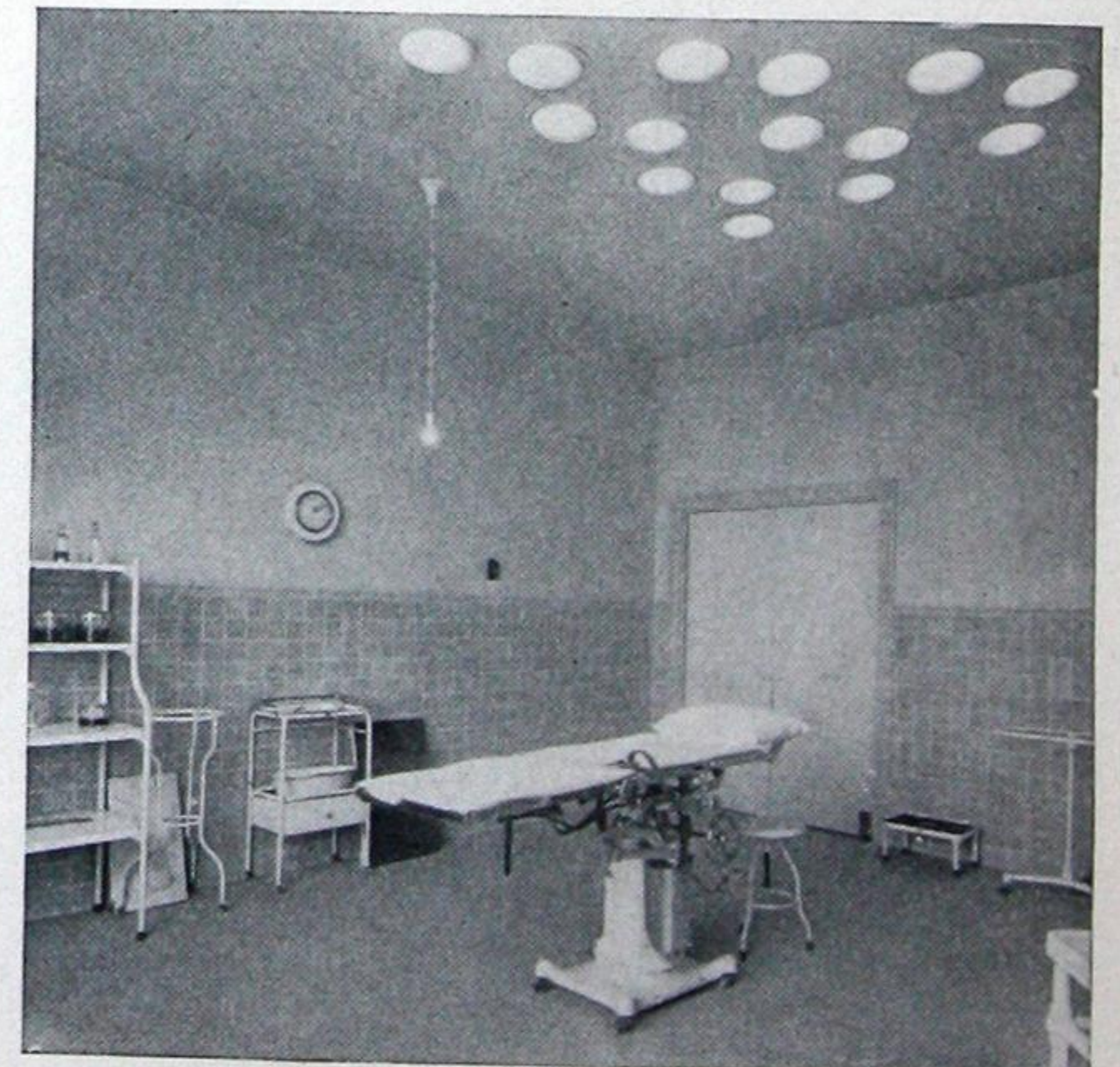
SECTION THRU POOL



13202B Unit

NOTE
For larger pools with high ceilings use X-Ray No. 580 Reflector for 300-500 watt lamps recessed over 13203B 14" ceiling rim

Typical Layout for Lighting Swimming Pool



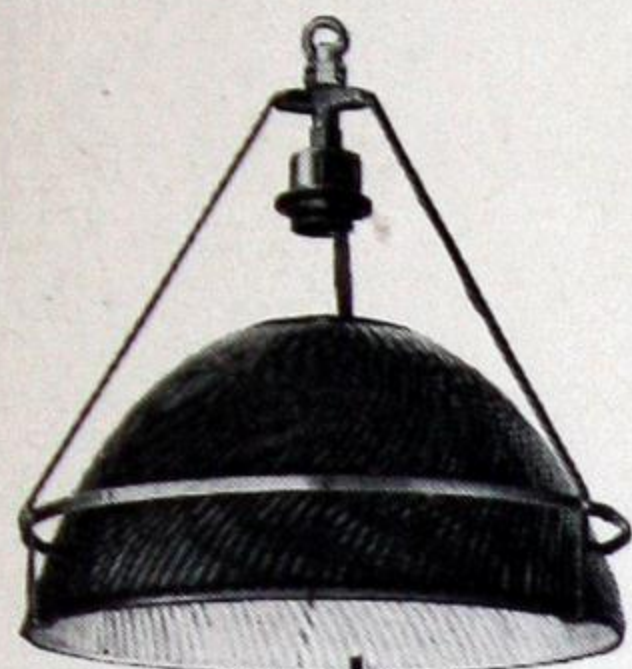
Operating Room, Lincoln Methodist Hospital, Lincoln, Neb.

FISKE, MCGINNIS and SCHAUMBERG, Architects
No. 33-A 200 Watt X-Ray Reflectors installed above No. 13202-B Units; 13 units provide approximately 200 foot candles, 30 units approximately 750 foot candles.

INDUSTRIAL LIGHTING

with

**X-Ray
Reflectors**



No. 590—"Big Boy"

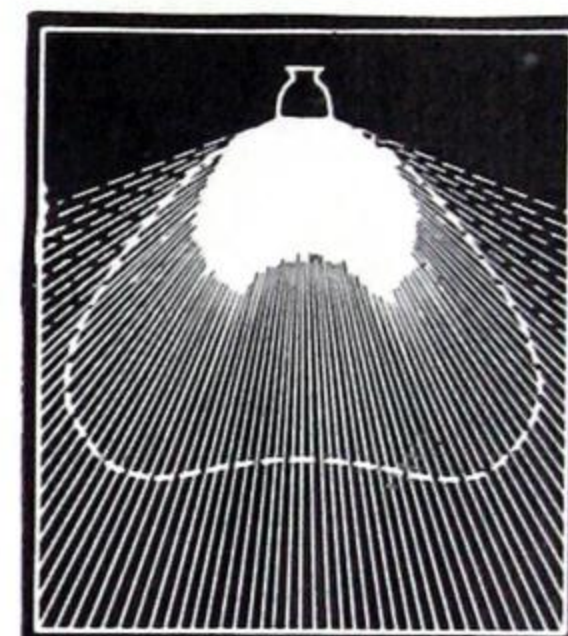


Semi-Concentrating

Semi-concentrating Reflectors have greatest punch of light "down" and a wide spread as shown above



No. 585—"Beehive"



Distributing

Distributing Reflectors have a wide spread of light, averaging about 90° as shown above

The two types of X-Ray Reflectors for Industrial Lighting, Semi-concentrating and Distributing, are available for local or general lighting, or for recessing above small skylights and glass panels. The 500 to 1500 watt sizes are especially recommended for high-bay mounting.

To determine the proper reflector to use requires only three steps:

- (1) Intensity of light required. (See Illumination Standards Table below.)
- (2) Area to be lighted by each outlet. (See Chart below.)
- (3) Mounting height for reflector equipment.

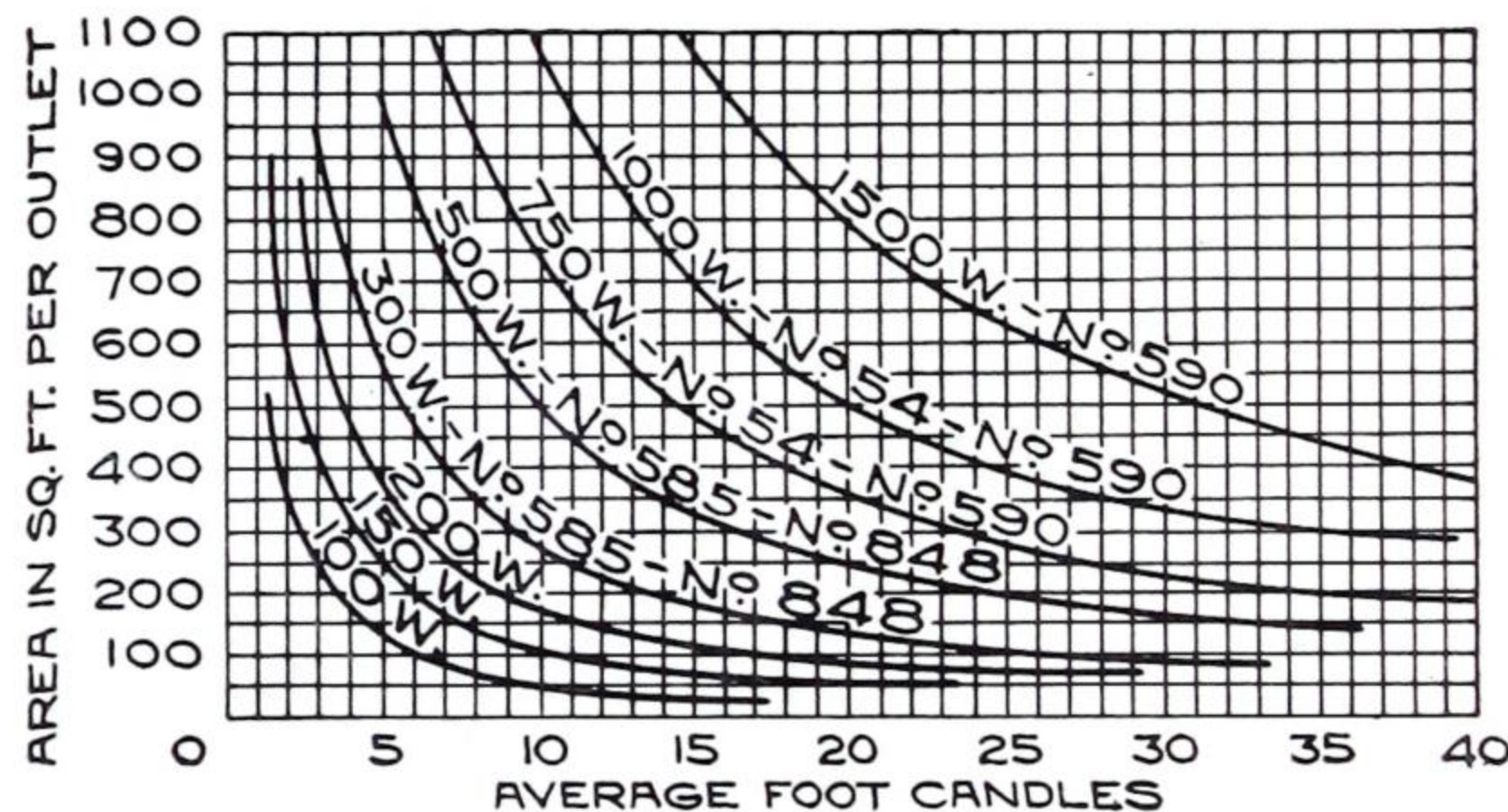
The entire room will be divided into bays (smaller areas in large rooms), generally determined by building construction, such as dividing beams, columns, etc.

INDUSTRIAL ILLUMINATION STANDARDS

Interior	Foot-Candles	Interior	Foot-Candles
Armories	10-12	Receiving, Shipping	6
Assembling	8-30	School Manual Training Rooms..	12
Cloth Products—Cutting, Sewing.	10-20	Skating Rinks (indoor).....	8
Foundries	8-15	Steel and Iron Mills:	
Garages	3-15	Charging, Casting.....	4
Gymnasiums	12-15	Rolling, Shearing.....	5
Inspecting	10-25	Storage, Stock Rooms.....	3
Machine Shops.....	10-25	Swimming Pools.....	8
Packing, Boxing	6	Textile Mills.....	6-20
Printing:		Woodworking:	
Engraving	50-100	Rough Sawing.....	8
Presses	12	Sanding, Veneering	12
Typesetting	10-50		

REFLECTOR DATA

No.	Diameter	Minimum overall height from ceiling to bottom of reflector	Size lamp, watts
Distributing Reflectors			
3	4 1/2"	6 1/2"	60-25
535	5 7/8"	7 "	100
570	8 "	10 1/4"	150
575	9 3/8"	11 1/8"	200
585	11 7/8"	20 "	500-300
54	16 1/2"	28 "	1500-1000-750
Semi-concentrating Reflectors			
696	8 3/8"	8 "	100-60
700	10 "	9 "	150
710	11 1/2"	10 "	200
844	8 7/8"	7 1/2"	100
848	13 1/4"	18 "	500-300
590	20 "	26 "	1500-1000-750



Use Large Size Lamps

Use large size lamps wherever possible as rated efficiency per watt increases with size of lamp.

For Distributing Reflectors spacing between units should not exceed twice the mounting height

For Semi-concentrating Reflectors spacing between units should not exceed the mounting height



High Mounting No. 590 and 54 X-Ray Reflector Units Are Mounted Above Traveling Crane

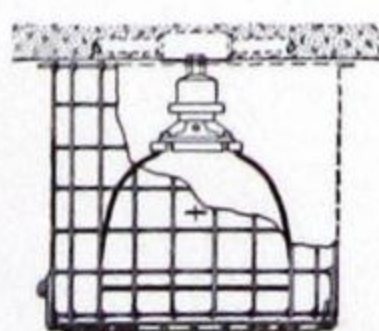
Wire Guards

For gymnasiums, armories, etc. Bottom is hinged. Guard is fastened to ceiling.

GUARD DATA

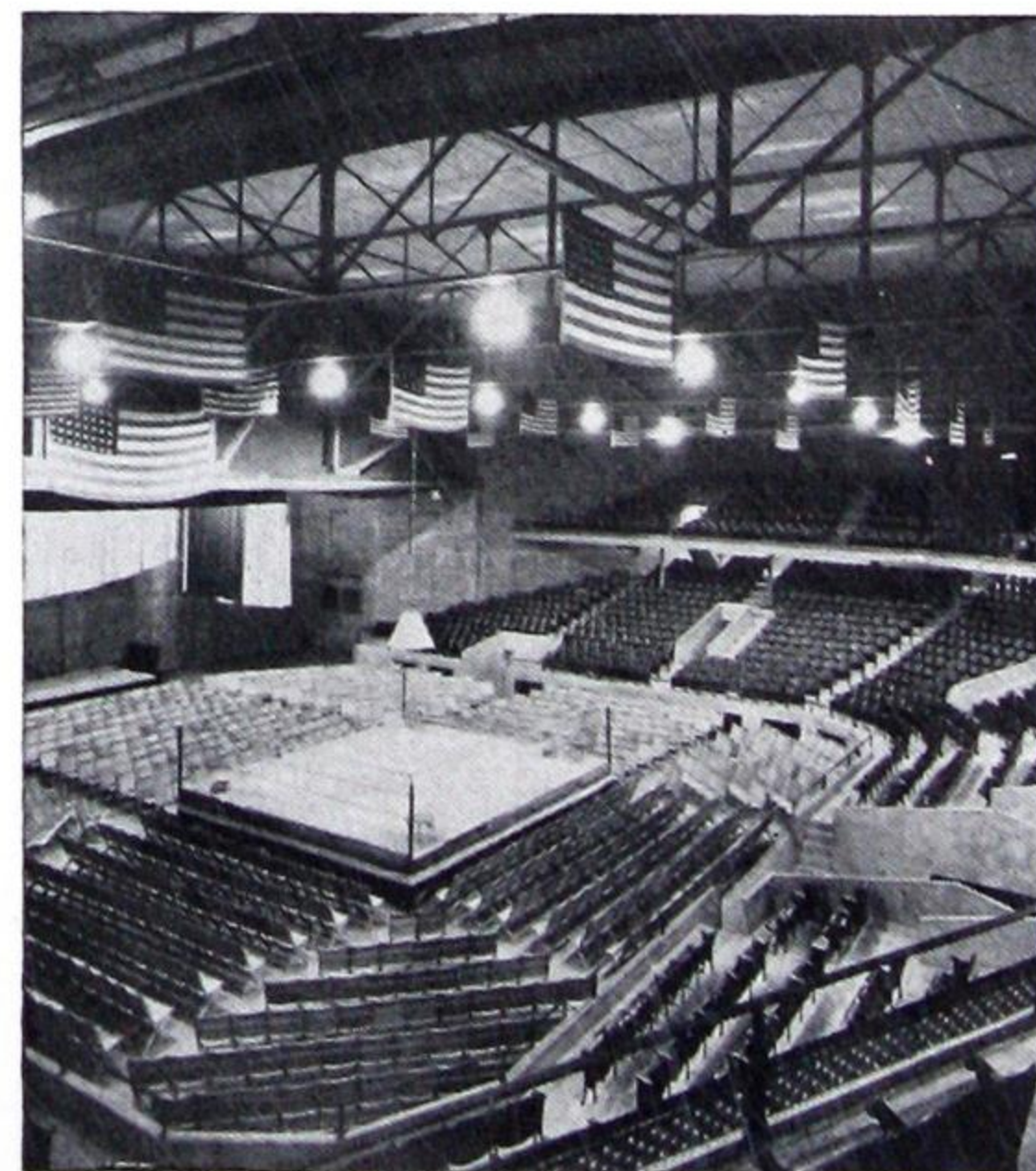
With Reflector No.	Lamp size, watts	Cat. No.	Diam., in.	Depth, in.
570	150	14506A	12	12
575	200	14507A*	13 1/2	13 1/2
575	200	14507B	13 1/2	19 1/2
585	300-500	14508A*	15 7/8	16
585	300-500	14508B	15 7/8	22
590	750-1500	10590	23	26
54	750-1500	10590	23	26

*Use only when slow burning wire is used. Otherwise use deep guard and 6-in. long nipple.



Sturdily Made

Guards are sturdily made of heavy gauge wire, heavily tinned. Bottom is hinged.



Large Gymnasiums or Arenas Are Effectively Lighted with X-Ray Reflectors

Planned Lighting

... Worked out in detail in the architect's office when the structure is being planned, to provide an ideal system of illumination,

... Produces harmony between structural arrangement and architectural detail, obviating later costly alterations and compromises in both architectural plans and lighting effect.

... Insures the right atmosphere or effect with proper interpretation of architectural values by providing the correct amount of illumination where it is needed.

... Provides flexibility for easily and economically increasing intensities of illumination for future needs.

"Planned Lighting" cooperation of Curtis Designers and Engineers is available to all interested!

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